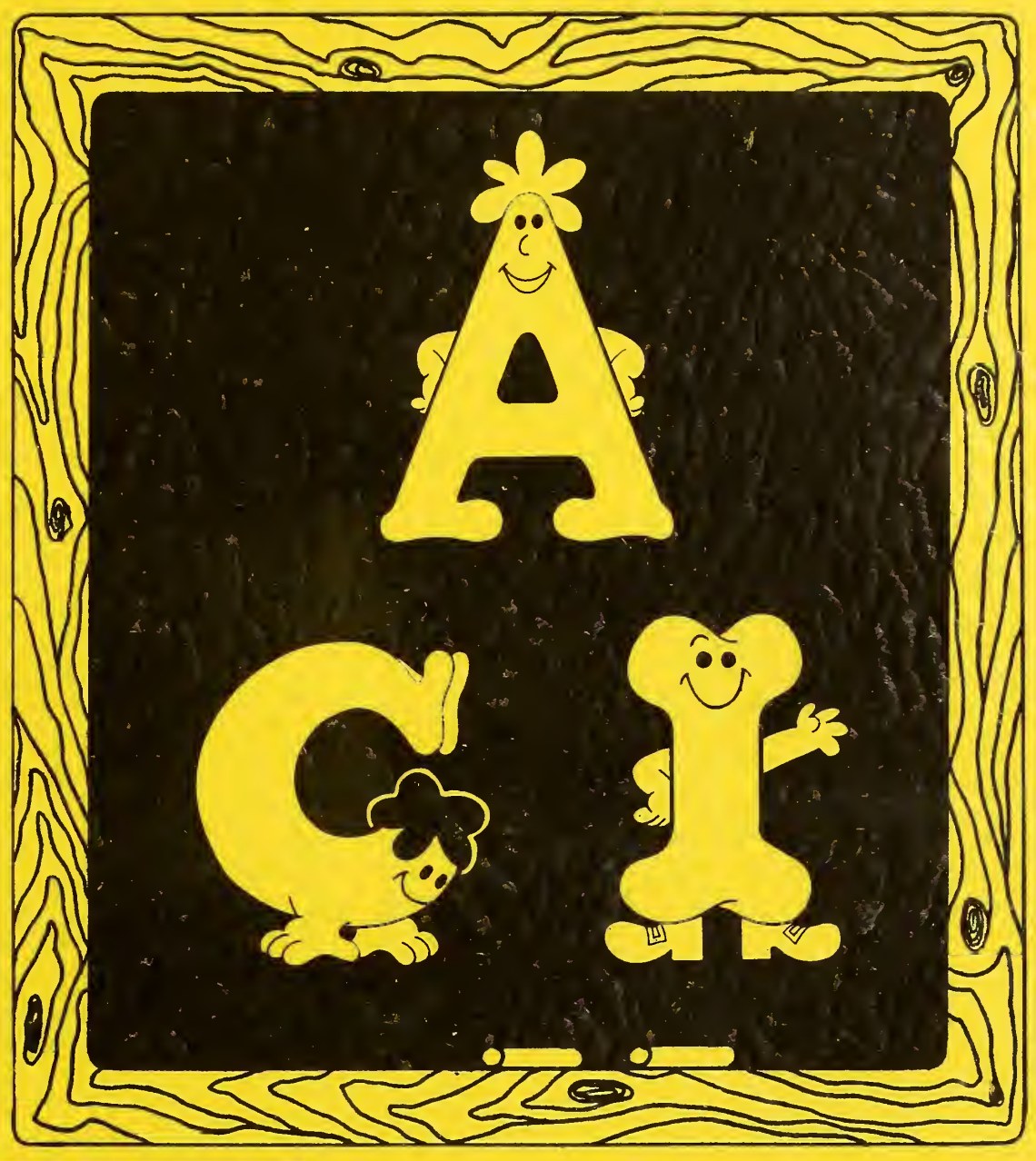
NUTRITION EDUCATION



CNETP

Connecticut Nutrition Education and Training Program
Department of Nutritional Sciences, College of Agriculture and Natural Resources
University of Connecticut and State Department of Education Child Nutrition Programs

NUTRITION IN ACTION
A Creative Dramatics Nutrition
Minicourse for

Grades 4 - 6

CONNECTICUT NUTRITION EDUCATION AND TRAINING PROGRAM

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INTRODUCTION

CREATIVE DRAMATICS NUTRITION MINICOURSE

This minicourse has been developed to teach fourth grade students the food sources and functions of protein, iron and vitamin C, and the importance of breakfast. The unique aspect of this minicourse is that it utilizes a creative dramatics educational approach. Creative dramatics is defined as informal drama which has little, if any, concern for an audience, is never memorized and permits maximum freedom for improvisation. It can take any one of the following forms:

1. warm up exercises- activities designed to loosen up the body and stimulate the imagination; activities are usually related to the theme or problem of the workshop.

2. creative movement- the act of expressing one's emotions through body movement.

3. simple dramatic play- imaginative play wherein a child portrays familiar experiences (or objects) or investigates new ones.

4. pantomime- actions which relate a story without verbalization of thoughts.

5. improvisation- unrehearsed or spontaneous dramatic presentations of real or imaginary incidents.

6. story dramatization- creation of an improvised play based on a story, whether original or from literature or other sources.

7. role playing- a means of investigating problems by portraying a concrete situation and clarifying personal views and values through objective discussion.

8. puppetry- a creative activity in which puppets are constructed and their dialogue is made up by players.

9. object reality- the act of giving living characteristics to inanimate objects and relating aspects of weight, shape and texture through pantomime or other theater games.

10. sensory awareness- a pantomimed response to taste, sight, sound, touch or smell.

11. sensory recall- an improvisation based on previous experiences including taste, sight, hearing, smell or touch.

12. concentration- giving one's undivided attention to a particular activity.

12. critiquing (rap time)- the process of evaluating group or individual activities in terms of their ability to satisfy or meet lesson objectives.

Objectives of Minicourse for Participating Students:

1. To increase fourth grade students' knowledge of the food sources and functions of protein, iron and vitamin C and of the importance of breakfast.

2. To develop the ability of fourth grade students to apply nutrition knowledge to real life situations.

Ten 30-45 minute lessons have been designed for use in the Science or Health curriculum. The minicourse may be used in two ways:

1. the entire minicourse can be implemented with flexibility provided for by the inclusion of several optional activities.

2. individual activities can be selected to supplement nutrition information presented.

Therefore, this minicourse allows the teacher to choose the program that will be most suitable to the students.

Evaluation of Minicourse

To measure increases in nutrition knowledge and the ability to apply that knowledge, a pretest and posttest will be administered to students.

NUTRITION IN ACTION

Outline of Lesson Plans

- Lesson I Introduction to Creative Dramatics Part I Pages 7-8

Title: Getting to Know You

Objectives:

1. Students will participate in a variety of creative dramatics activities including small and large muscle movement, pantomime and concentration exercises.

Learning Activities

A. Introduction to minicourse and creative dramatics
B. Explanation of need for warm up activities
C. Warm up activity-Theme:Creative Movement
D. Explanation of class structure
E. Concentration exercise-Learning students' names
F. Pantomimes-"Actions Speak Louder than Words"
G. Rap time-Discussion of importance of movement, facial expression (actions) in the transmission of ideas.

- Lesson II Introduction to Creative Dramatics Part II Pages 9-10

Title: Let's Work Together

Objectives:

1. Students will participate in a variety of creative dramatics activities including small and large muscle movement, pantomime, imagination exercises, improvisational role playing and sound/motion exercises.
2. Students will show through the above creative dramatics activities at least one example of the necessity for parts of an object to work together.

Learning Activities

A. Warm up activity-Theme: The Importance of Working Together
B. Improvisational Role Playing-The Importance of Working Together
C. Machine Game-Creative Movement Exercises on the importance of working together
D. Rap time-Discussion of how parts of objects and machines or class members must work together for efficient functioning.

● Lesson III The Human Body (with emphasis on the digestive system) Pages 11-14

Title: The Human Body-That Amazing Machine

Objectives:

1. Students will state at least one function of each of the following in the digestive process: mouth, esophagus, stomach, small intestine, bloodstream.
2. Students will explain the importance of all parts of the digestive system working together.

Learning Activities

A. Warm up activity-Theme: Body parts working together
B. Discussion of human body parts working together
C. Discussion of a cell and food for the cell
D. Dramatization of digestive process (showing how all parts in digestive system must work together).
E. Rap time-Review of how all parts of digestive system must work together.

● Lesson IV Protein Part I Pages 15-17

Title: Meeting the Protein Family

Objectives:

1. Students will name at least three sources of animal protein and three sources of vegetable protein.
2. Students will identify at least one example of a complete protein and one example of an incomplete protein.

Learning Activities

A. Warm up activity-Theme: Complete and incomplete shapes
B. Review process of digestion and definition of nutrient
C. Description of protein family
D. Explanation and dramatization of amino acids as the building blocks of protein
E. Discussion-Protein complementarity
F. Rap time-Review of animal and vegetable sources of protein and ways to make complete proteins from incomplete proteins

● Lesson V Protein Part II Pages 19-21

Title: Protein's Trip to Your Cells

Objectives:

1. Students will name at least one function of protein
2. Students will name at least three examples of complete protein made from vegetable sources of protein or from animal and vegetable sources of protein
3. Students will identify at least one function of each of the following in the process of protein digestion: mouth, esophagus, stomach, small intestine, bloodstream

Learning Activities

A. Warm up activity-Detective Game: review of food sources of protein
B. Protein Partners Game-Complete and Incomplete Protein
C. Dramatization of protein digestion
D. Alternate activity-Create a Story game: protein digestion
E. Functions of protein-telephone game
F. Rap time-Review of functions of protein, process of protein digestion and protein complementarity

● Lesson VI Iron Part I Pages 23-24

Title: All About Iron

Objectives:

1. Students will identify at least three food sources of iron
2. Students will name one function of iron

Learning Activities

A. Warm up activity-Theme: Job of heart pumping blood through body
B. Discussion-Iron: from the earth to us
C. Concentration game-Food sources of iron
D. Function of iron-dramatization
E. Alternate activity-Create a Story game: food sources and function of iron
F. Rap time-Discussion of food sources of iron and protein

● Lesson VII Iron Part II Pages 25-26

Title: Iron and its Helpers

Objectives:

1. Students will identify at least one way to help increase iron absorption in the body
2. Students will list at least three food sources of vitamin C
3. Students will identify the function of vitamin C as it relates to iron absorption.

Learning Activities

A. Warm up activity-Detective Game: Review of food sources of iron
B. Review of functions of iron
C. Comic strip reading "The Adventures of Iron Ike the Spike"
D. Improvisation of comic strip
E. Create a Story Game: Food sources and functions of iron and vitamin C
F. Rap time-Review of food sources and functions of iron and vitamin C and ways to increase iron absorption

● Lesson VIII Breakfast Pages 27-29

Title: Breakfast-A Smart Start

Objectives:

1. Students will name at least one reason why breakfast is important
2. Students will name at least one food that they would eat for breakfast that is a source of protein; iron; vitamin C.

Learning Activities

A. Warm up activity-Theme: Energy
B. "Rupert the Tired Rabbit"-Puppet Show/sound-motion story
C. Making breakfast game
D. Alternate activities: T.V. commercial/interview on the importance of breakfast; Musical breakfast game; Alphabet game
E. Rap time-Review of importance of eating breakfast

● Lessons IX and X - Review Pages 31-33

Title: "Rapping" it all Up

Objectives:

1. Through improvisation, students will apply their knowledge of the food sources and functions of protein, iron and vitamin C to choosing foods in real life situations.

Learning Activities

A. Warm up activities-Treasure Hunt Game: finding the nutrients in menus
B. Improvisation/role playing situations reviewing:
   - food sources and functions of protein, iron and vitamin C
   - the importance of breakfast
C. Rap time-will follow each improvisation

Lesson I Introduction to Creative Dramatics Part I

Title: Getting to Know You

Objectives: 1. Students will participate in a variety of creative dramatics activities including small and large muscle movement, pantomime and concentration exercises.

Introduction

Introduce yourself to class. Explain that you will be working with class for approximately ten days. Before telling students exactly what you plan to do, ask them to think of some things that everyone does everyday. (i.e. sleep, eat, etc.) Ask class if these things are important. Why/Why not? Explain that this program will focus on why eating is important. Ask class if they know the word that refers to the study of food and why it is important to good health. (Answer-Nutrition). Explain that students will be learning about nutrition through Creative Dramatics. Briefly discuss the components of Creative Dramatics (i.e. puppetry, acting out stories about nutrition, movement exercises, pantomime).

One of the first things done in each class is the warm up activity. Explain that in order to accomplish tasks well, people should be relaxed or "loosened up." Give examples of warming up (i.e. warm up before athletic events, warm up before dance classes or performances, vocal exercises before singing). This same idea applies to learning. When students are relaxed they can learn better. Since Creative dramatics activities involve body movement, warm ups will involve large and small muscle exercises.

Warm up Activity

Ask students to form a large circle.
Large Muscle Exercise-Stretch to ceiling, collapse at waist (Raggedy Anne style). Bend backwards, sideways; Run in place; Make circular movements with head, arms, legs.

Explanation of class structure

Describe the use of small group, large group exercises, group discussion and interaction. To control noise level, (due to small group discussion), explain use of the bell which signals that students should "freeze." This will help remind students to control volume.
Discuss importance of Listening.

1. necessary to learn from students' answers, questions and performances
2. necessary to follow instructions for class activities

Concentration Exercise

Purpose-to learn children's names.
Ask children to stand in a circle, say their name and act out something they enjoy doing (i.e. sport, hobby etc.). Each successive child will repeat the previous child's name and activity and then add his/her own name and pantomime. Do in sets of 6 students.

Discuss familiar adage, "Actions speak louder than words." Demonstrate an emotion through pantomime (i.e. surprise). Have students guess which emotion you are portraying. Next, using the following emotions, ask students to portray them through facial and body motions: anger, worry, happiness, fright, boredom, reaction to funny joke. Next, let children isolate body parts (i.e. hand, toe, knee, foot, etc.). Let each body part express the same emotions. In other words, ask children to share with everyone a happy hand, a sad toe, a frightened knee, a bored foot, a scary hand, etc.

Rap time

Ask students whether they agree/disagree with adage. Discuss importance of body movement, facial expression, etc. in the transmission of an idea. Explain that in future lessons we will depend on this mode of communication to learn about new things.

Materials

Bell

New Terms

Creative dramatics, pantomime

Creative Dramatics Techniques

pantomime
concentration
small, large muscle movement
creative movement

Lesson II Introduction to Creative Dramatics Part II

Title: Let's Work Together

Objectives:
1. Students will participate in a variety of creative dramatics activities including small and large muscle movement, pantomime, imagination exercises, role playing and sound/motion exercises.
2. Students will show through the above creative dramatics activities at least one example of the necessity for parts of an object to work together.

Warm up activity - Barefoot Walk

Ask students to concentrate on imagining that they are:

1. Walking barefoot on or through mud, broken egg shells, thick carpets, quicksand, hot sand, wet tar. (Pantomime)
2. Walking a tightrope
3. Running in an open field
4. Playing hopscotch

Next, arrange students in a cirlce. Tell them that you have an "object" in your hand and you are about to "magically" change it. (Give reference to the object's characteristics or nature by a brief pantomime or sounds). Pass the object to the next child who must identify the object, change it into something new, do an original pantomime, and pass the object on to the next student.

Role Playing/Object Reality

Begin a discussion about the importance of working together. Give examples from the preceding activity. If one student failed to participate, the game would not have been able to proceed. Ask students to think of examples of machines or toys which depend on all parts working together in order for this object to do its job or function.

Examples: bicycle-depends on wheels, seat, handle bars, chains, pedals.

Divide class into groups of 3-4 students. Ask groups of students to:

a) Choose an object (composed of various parts dependent on one another in order for the object to function).
b) "Become" each part. Through dialogue, motions, vocal sounds and rhythms, students should communicate the following points:
    1. the object the group has become
    2. the specific part each member has become
    3. why this part is necessary for the proper operation of the object

As a group, students should demonstrate the way in which their object works.

Variation: One part can suddenly "break down". Show how it is impossible for the object to work without this part. Let students show other groups what they have developed. Let class try to guess the name or kind of machine the group has become.

Alternate Suggestions:

1. The No-Name Machine game-Divide class into groups of 3-4 students. Ask the first student in the group to begin a rhythmic movement, accompanied by sound. (i.e. move both arms up and down with accompanying "squeak, squeak" with each movement.) The second child in the group should move in a way that will complement the first part of the machine. (i.e. when student #1 has arms raised, student #2 may raise his knee under the raised arm. When the arms are lowered, the knee is also lowered. Sounds should accompany each rhythmic movement.) The third and fourth students than add their movements and sounds so that a four part No-name machine is made. Students should show what happens when one "part" is missing.

2. The Alphabet game-Divide class into groups of 3-4 students. Ask one student in the class to choose a letter of the alphabet out of a hat. Each group should think of an actual machine beginning with that letter and "act it out" as described previously. Sounds, rhythms and motions should be included. Students should demonstrate what happens when one part is missing. When ready, let each group share their machine with the rest of the class.

3. The Machine game-Divide class into groups of 3-4 students. Ask one class member to pick a card from a hat. On the card will be written the name of an object or machine composed of various parts. (i.e. telephone, wagon, television, etc.). Let each group develop and share their own representation of this machine or object. Include what would happen if the machine or object had a missing or broken part.

Rap time

Discuss the importance of parts of objects and machines and relate to class members working together so that jobs can be carried out efficiently. Tell class that in the next lesson we will find out about another fantastic machine that depends on many different parts working together in order for it to work.

Materials

bell; hat/box; index cards with letters of alphabet; index cards with names of machines

New Terms

NONE

Creative Dramatics Techniques

small/large muscle movement; pantomime; imagination; role playing/object reality; sound/motion exercises; creative movement

Lesson III The Human Body

Title: The Human Body-That Amazing Machine

Objectives:
1. Students will state at least one function of each of the following in the digestive process: mouth, esophagus, stomach, small intestine, bloodstream.
2. Students will explain the importance of all parts of the digestive system working together.

Review

Ask students to recall the main theme of the previous lesson (i.e. all parts of objects/machines are important in order for objects/machines to work properly.)

Warm up Activity

Purpose - This activity is designed to help demonstrate how our many body parts are dependent upon each other in order for the human body to work properly.

1. See how many different ways you can move your: hands, feet, arms, head, etc.
2. Demonstrate what it would be like to be without elbows, knees, finger joints, facial, leg and arm muscles, or to have broken bones.

Ask class to think of one of the most amazing machines there is. Clues:
1. not composed of metal, stone, fabric or rubber
2. usually lasts a long time and occasionally needs minor repairs, sometimes major repairs
3. this machine comes in many different varieties, sizes, and colors
4. we see this "machine" every day
5. it does not run on electricity, gasoline, solar or nuclear energy, but on energy from food

Identify the "amazing machine": The Human Body

Review concepts mentioned in previous class (i.e. the importance of parts of an object working together, and different interpretations of the same kind of machine.) Conclude that: 1) although each individual is very different in terms of size, color, appearance, etc., we all have standard parts (i.e. arms, legs, eyes, etc.). This is similar to the many different types of trucks, cars, etc., which all have standard parts; 2) it is very important for all these parts to work in the body so that it can function well.

The Cell

Explain that cells and organs also have to work together in order for the body to function properly. Every living thing is made of cells (smallest units of life). There are many different kinds of cells (i.e. skin, blood, muscle, bone) but they are alike in the following way:

1. Every cell is like a tiny package. There is soft material inside the cell and a cover, called the cell membrane, is the wrapping on the "package." Your blood travels through the body and carries food to the cells. The food has been made very small (smaller than the tiniest bite), and has been broken down into nutrients.

Define Nutrients - Nutrients are found naturally in food. They are the food for our cells. They are important to help your body grow and stay healthy. There are many nutrients and they each have a special job in your body. There is a special word that is used to describe the process of preparing food for the cells - Digestion.

The Digestive System

Display a transparency that shows the various organs in the digestive system. Discuss the function of each part.

Mouth: chews food making it into smaller pieces: saliva facilitates movement of food into esophagus; saliva begins to break down food into nutrients.

Esophagus: tube that carries food from mouth to stomach; tube squeezes in and out to facilitate movement of food into stomach. (Use sock and round object to show how movement (peristalsis) help push food through esophagus).

Stomach: continues to break down food into its nutrients: digestive juice in stomach helps break down food; stomach also moves in and out to help push food into the intestine.

Small intestine: carries broken-down food to bloodstream where it can be taken to cells; digestive juice helps break down food also; intestine moves in and out to help push food through intestine.

Large intestine: food unable to be digested passes through large intestine and then passes from the body.

Dramatization of process

Explain that students will become the various parts of the digestive system. Stress the idea that all parts must work together in order for digestion to occur.

Characters needed: Mouth (upper jaw, lower jaw), saliva pourer, esophagus, stomach, digestive juice pourer for stomach, small intestine, digestive juice pourer for small intestine, food (i.e. different students will represent various nutrients linked together.)

Note: To help identify body parts, students may wear signs, and students representing saliva and digestive juice "pourers" may use jugs as props.

Student Arrangement of Digestive System Parts

Note: Each line represents one student (to be adjusted according to class size)

MOUTH

ESOPHAGUS-2-4 students should face each other

STOMACH-students should form a circle that is open at two ends

SMALL INTESTINE-2-4 students should face each other

Note: All students representing body parts should face inward so they can observe the actions of fellow students.

DIGESTIVE PATH	ROLE PLAYING ACTIONS
1. Mouth	Students representing food will link arms and will pass through mouth. Students representing upper and lower jaw can pantomime "chewing" process. Students representing saliva can "pour" saliva over food. Students representing food will slowly shrink towards floor to show that chewing and saliva helped to break down food into smaller pieces and into nutrients. Saliva also helps to soften food so that its trip through the esophagus will be easier.
2. Esophagus	Students representing esophagus will form two lines and face each other. As food passes through esophagus, students can gently push food into stomach.
3. Stomach	Students representing stomach should make groaning sounds in anticipation of food. Students representing digestive juice can "pour" juices over food. Students representing food should allow digestive juices to "break apart" some links. This will show how food is separated into its nutrients.
4. Small intestine	Partially digested food will move into small intestine. Students representing small intestine can gently push food through.

Explain that food which has been broken down into nutrients will pass through wall of small intestine and into bloodstream and will be carried to cells.

Food unable to be digested moves through the large intestine and then is excreted. Review and repeat the dramatization as necessary.

Rap time

Review how all parts of the digestive system must work together and review the functions of each organ in the digestive process.

Materials

bell
signs to identify various parts of the digestive system (optional)
jugs (for saliva and digestive juice "pourers")
* transparency of human digestive system , transparency of the cell
sock and round item to demonstrate peristalsis

New Terms

cell
cell membrane
digestion
digestive system
digestive juice
saliva
esophagus
small intestine
large intestine
nutrient

Creative Dramatics Techniques

large/small muscle movement
pantomime
sound/motion exercises

*Provided -Camera Ready copies to use to make transparencies

Lesson IV Protein Part I

Title: Meeting the Protein Family

Objectives:
1. Students will name at least three sources of animal protein and three sources of vegetable protein.
2. Students will identify at least one example of a complete protein and one example of an incomplete protein.

Warm up activity-Alphabet game

Arrange students in a circle. Do simple exercises (i.e. jumping jacks, running in place, skipping). Next, divide class into pairs. Let one student from each pair select a letter of the alphabet from hat/box. They should then become that shape through body positions. Share ideas with class showing the shape as two halves and then as a whole. Mention that the shape as two halves is Incomplete. When the halves are put back together, it will be a Complete shape.

Review

Explain that our bodies are composed of millions of cells, all of which must stay healthy if we want to stay healthy. Our bones, blood, muscles and skin are made up of different groups of cells. Each has its own unique job to do. There fore it is important that they get nutrients to do their work. Review definition of Nutrient (the food for the cells). Review functions of mouth, esophagus, stomach, small intestine, bloodstream in the process of digestion.

Protein

Today we will speak of one very special nutrient. Its name is Protein. Ask class how many have heard this word before. Explain that nearly everything in your body is composed of protein including hair, nails, skin, bones, blood. In order to grow, your body must make more skin, hair, muscles, etc. You can make these parts by eating protein foods. The protein you eat must get broken down in your body (through digestion) and then built back up into these body parts.

Explain that the word protein is similar to a surname. Ask one student to tell you his/her last name and the names of all faculty members. Construct the following analogy:

Jones Family

Members: Mary, Jeff, Tom, Christine

Protein Family

Animal sources: meat, fish, milk, eggs, poultry, cheese
Vegetable sources: grains (oats, barley, rye, wheat, rice, etc.)
legumes (beans, peas)
seeds, nuts

(Use Dairy Council Food Models and felt board to display these foods or display actual foods).

Explain that these protein foods are made up of tiny units that are like building blocks. They are put together in a very special way. The building blocks of protein are called amino acids. There are 22 different amino acids. By putting the amino acids together in different combinations, different protein foods can be formed. (It is just like making different words from the 26 letters of the alphabet.)

Dramatization

Have students stand in a position that is different in some way from every other student. (i.e. hands on shoulders, finger in ear, hands on top of head, etc.). This will identify each of them as one of the 22 amino acids. Once in position, students should "link up" to other amino acids. (Do in groups of 7-8). These arrangements of students will represent food sources of protein. (Students may wish to identify the protein food they represent). Then ask students to form another food source of protein by arranging themselves in a different pattern. (They should maintain the original body position). These combinations can now represent another protein food of the students' choice.)

Protein Complementarity

Explain that our bodies can make all but nine amino acids. Since the body cannot make these nine, we must get them from the protein foods we eat every day.

Animal sources of protein (i.e. meat, fish, eggs, poultry, cheese, milk) contain all nine amino acids. Therefore we call them Complete Proteins.
Plant sources of protein (i.e. grains, nuts, seeds, beans) contain protein, but may be missing one or more of the nine amino acids. Therefore we call these foods Incomplete Proteins.
The incomplete proteins cannot work as well in our bodies as the complete proteins. So if we combine certain incomplete sources of protein with other incomplete sources of protein we can make the incomplete sources complete.

Explain that incomplete proteins can help repair the body and help you grow, but they can do a better job if they are made complete. Since all plant sources of protein are not low in the same amino acid, we must know which combinations to make so that we can make complete proteins having all nine amino acids. There are tricks to remembering how to make incomplete proteins complete.

COMBINE GRAINS + LEGUMES (peas, beans) i.e. macaroni and beans; rice and lentils
SEEDS + LEGUMES (i.e. sunflower seeds and peanuts)
NUTS + LEGUMES (i.e. walnuts and peanuts)

Note: You can also combine an incomplete protein with a complete protein (i.e. cereal and milk; macaroni and cheese) to make a complete protein.

Rap time

Have students name examples of grains, beans, nuts and seeds. Let them explain how to make complete proteins from:

1. two sources of incomplete protein
2. one complete protein and one incomplete protein

Have students name examples of animal sources of protein.

Materials

bell
food models/pictures with velcro on back
felt board
hat/box
alphabet cards
grains, nuts, seeds, beans
*PROTEIN fact sheet

New Terms

Complete/Incomplete Protein
amino acid

Creative Dramatics Techniques

large, small muscle movement
simple dramatic play
creative movement

*Provided

Lesson V Protein Part II

Title: Protein's Trip to Your Cells

Objectives:
1. Students will name at least one function of protein (i.e. helps build and repair cells, or is needed for growth).
2. Students will name at least three examples of complete proteins made from vegetable sources of protein or from animal and vegetable sources of protein.
3. Students will identify at least one function of each of the following in the process of protein digestion: mouth, esophagus, stomach, small intestine, bloodstream.

Warm up Activity-Detective game (object reality)

Ask students to think of one food that is a source of protein. Think of its shape, or the characteristics of the food or animal it comes from (if it is an animal source of protein). Ask for volunteers to come up to the front of the class and give verbal clues as to the nature of the protein food. To accompany words, actions and sounds should be used.

Example: I am small and oval (shape body into small, rounded position) and I come from a ....(imitate wing flapping or sounds characteristic of hens)

What am I?

(Answer - egg)

Review

Ask students the following questions: What is the name of the building blocks of protein (amino acids)? How are different proteins made? (amino acids are put together in different combinations). Give some examples of complete proteins/incomplete proteins.

Protein Partners Game

Put the following food models/pictures or words on index cards: bread, crackers, rice, tacos, kidney beans, peanut butter, macaroni, baked beans, rye bread, split peas, lentils, chicken, fish, hamburger, meat loaf, eggs, milk, cheese. Put index cards in a hat/box and have each child pick out one card. Ask students to stand in a circle. Go around circle asking each student to identify whether the food is a complete or incomplete source of protein. Then, one by one, students will come to the center of the circle. If the food on the card is an incomplete source of protein the student must find a protein partner that will make the incomplete protein complete. When the 2 students representing the complete protein are together, they should show through body positions that they are a complete letter of the alphabet (as done in previous lesson). If the student has a complete source of protein he/she has the option of remaining alone or linking up with an incomplete source of protein.

Protein's Trip to Your Cells

Write the following words on slips of paper or index cards and place in a hat/box: Amino acid (make approx.5-6), mouth, esophagus (make approx.6), stomach (make approx.8), small intestine (make approx.6) saliva (make 1), digestive juice pourers (make 2). Students will use sound and motion during the dramatization. The process will proceed as follows:

Ask the students representing amino acids to join together as in previous lesson. Together they will become a protein food.

Arrange Digestive System Parts as in Lesson III.

DIGESTIVE PATH	ROLE PLAYING ACTIONS
1. Mouth	Students representing protein food (composed of individual amino acids) will link arms and form a coil as they pass through mouth. Students representing upper and lower jaws can pantomime the "chewing" process. Students representing saliva can "pour" saliva over food. Students representing the protein food should slowly shrink towards floor to show that chewing and saliva have helped to break down food into smaller pieces.
2. Esophagus	Students representing esophagus can gently push food into stomach. (Pushing motions should be rhythmic).
3. Stomach	Students representing stomach can gently move in and out of circle in a rhythm so as to represent peristaltic movements of stomach. They can also make "groaning" sounds in anticipation of food. Students representing digestive juice can "pour" juices over food. The coil of students can uncurl. Some links will also be broken at this time.
4. Small intestine	Partially digested food will move into small intestine. Students representing digestive juices will continue to pour juices over food. The remaining links will be broken apart.

Explain that we are left with individual amino acids which will pass through the wall of the small intestine, pass into the bloodstream and be carried to the cells. Here the amino acids can be built back up into the different body parts that need them.

Alternate Activity

Tell the class the following story. When you stop, each student will add one part to the story that is based on what was learned in the previous activity.

One upon a time there was an amino acid. The amino acid got together with some other friendly amino acids and when enough friends were together, they

became a protein food named chicken. Then one day, Larry, a fourth grade student, wanted an afterschool snack. When he got home, surprisingly Larry's mom had already heated the leftover chicken. Larry hungrily reached for the chicken. Quietly, the protein food prepared for its trip through Larry's body....

Each child should add one sentence describing protein's adventure in Larry's body.

Functions of Protein-Telephone game

Seated in a circle, whisper to first child: "Protein helps build and repair my body." Each child should pass the protein message. The last child should state the function of protein. Then, as a group, students will act out the function. Explain that when protein builds your body, it is making new cells and therefore you grow. When you have cuts, bruises, broken bones, etc., protein helps repair your body.

Rap time

Let children state what they learned about the following topics: protein digestion, the functions (jobs) of protein in the body, complete/incomplete proteins.

Materials

bell
signs or pictures to identify various body parts in the digestive system
jugs for digestive juice pourers
index cards with names of complete/incomplete protein foods
hat/box

New Terms

NONE

Creative Dramatics Techniques

large/small muscle movement
pantomime/object reality
sound/motion exercises
creative movement

Lesson VI Iron Part I

Title: All About Iron

Objectives: 1. Students will identify at least three food sources of iron.
2. Students will name one function of iron.

Warm up Activity

Let each student find their heart beat and notice the rate at which it is beating. Now ask children to do jumping jacks or run in place. Ask them to put their hands over their hearts. Are their hearts beating faster? Tell them that their heart is a pump which makes the blood go to all parts of the body. The blood carries oxygen with it which all cells need to be healthy. In this lesson we will find out what nutrient we need to have healthy blood.

Introduction

Display piece of iron ore. Pass around to all students. Ask students where iron can be found. Explain that iron is a mineral found in the earth. (A mineral is a natural element of the earth. It cannot be destroyed or broken down by fire.) Mention that some plants have iron in them. How does it get into the plant? Why do plants need iron? Explain that some plants (i.e. dark green leafy vegetables, fruits, beans, whole grains) need iron to grow. Without it they will be unhealthy plants. Just like the plant, we need iron to stay healthy too. But do we grow in the ground? Of course not. So we must eat those plants that have iron to get the iron we need. Besides humans, who else eats plant foods? (animals). Mention that since iron is kept in the animal's body, when we eat animal products, especially meat, we can get iron too.

Concentration game

Using Dairy Council Food Models, display food sources of iron on felt board. (i.e. red meat, dark green leafy vegetables, whole grains, dried fruits, legumes). Ask students to study them briefly. Then remove one or more food models without the class observing you. Ask them which foods are missing. Repeat several times until all food models have been removed at least once.

Jobs of Iron (improvisation, creative movement)

Explain that blood is made of different parts, one of which is the mineral iron. Iron is needed to allow the blood to bring oxygen to the cells of the body. Ask students to stand in a line. They will represent body cells. Select one student to represent oxygen. (Optional-Let this student wear a sign labelled OXYGEN.) Another student should be selected to represent the mineral Iron. A dramatization should proceed wherein the iron brings oxygen to the cells. Students representing body cells should show through body movement and facial expressions how it feels to be a healthy cell.

Improvisations

Divide the class into two groups. Ask the students to dramatize one of the following scenes:

I.

It is close to midnight and the grocery store owner has just closed the store. At the stroke of 12:00, the foods come alive. Show through movement, sounds and/or dialogue with other foods:

1. who you are (i.e. what food you have become)
2. why customers should buy you (this information should be based on nutritive value, taste, etc.)
3. if the food is a source of iron, explain why iron is necessary in the body.

Note: If less nutritious items are portrayed, there may be dialogue between nutritious and less nutritious foods concerning the benefits/nonbenefits/lack of benefits/drawbacks of purchasing either item.

To help guide the improvisation the classroom teacher should take an active role in the improvisation.

II.

An unidentified flying object has landed in front of a grocery store. The space men get out of their ship and enter the strange building. Their mission is to find out about iron. Show a scene that includes the following points:

1. who you are (i.e. space men, grocery store owner, foods)
2. which foods are sources of iron
3. the job of iron in the body

Rap time

Review food sources and functions of iron. Ask students if they remember meeting any of these foods before in a previous lesson. Meat, beans and grains are sources of protein.

Materials

bell
iron ore
felt board
Dairy Council Food Models (meat, fish, poultry, dried fruits, whole grains, dark green leafy vegetables)
*IRON fact sheet
Signs labelled OXYGEN, IRON

New Terms

iron
mineral

Creative Dramatics Techniques

large/small muscle movement
concentration exercises
improvisational role playing
creative movement

*Provided

Lesson VII Iron Part II

Title: Iron and its Helpers

Objectives:
1. Students will identify at least one way to help increase iron absorption in the body.
2. Students will list at least three food sources of vitamin C.
3. Students will identify the function of vitamin C as it relates to iron absorption.

Warm up Activity-Detective Game (object reality)

Ask students to think of one food that is a source of iron. Think of its shape, or the characteristics of the food or animal it comes from (if it is an animal source of iron). Ask for volunteers to come up to the front of the class and give verbal clues as to the nature of the iron food. To accompany words, actions and sounds should be used.

Review

Review function of iron. Review foods that are sources of protein and iron. Next, explain that many people, especially children, do not eat enough foods that give us iron every day. This is partly because the amount of iron in foods is so little that it is necessary to eat many foods that are sources of iron in order to meet your iron requirement. Also, when we eat food sources of iron, the body is able to absorb only some iron from the food. So we need help to get this mineral.

There are two "tricks" to help you get enough iron. The first is to eat foods that are sources of iron with foods that are sources of vitamin C. Ask class if they know of any foods that give us vitamin C. Introduce puppets: Peter Pepper, Tammy Tomato, Ollie Orange (from the Citrus Fruit Family-lemons, limes, tangerines, grapefruit also belong to this family). Betty Broccoli (a representative of the green leafy vegetable family).

Next explain that another way to help you get iron is to cook foods that are sources of vitamin C in an iron skillet.

The Adventure of Iron Ike the Spike (Sound Motion Story)

Read the comic strip: The Adventure of Iron Ike the Spike. (Tell class that Iron Ike the Spike is our friend who tells us about iron). Ask class to pantomime the story as it is read. After reading the story discuss the important points in the comic strip. Then ask students for examples of eating foods that are sources of iron and vitamin C. (baked beans and tomato sauce; sandwich on whole wheat bread and orange juice).

Divide class into two groups. Ask one group to choose one of the following puppets and do their own improvisation of the comic strip: Iron Ike the Spike, Betty Broccoli, Tammy Tomato, Peter Pepper, Ollie Orange, Patrick Potato, the Iron Pan Man, Red Meat Character, Dried Beans Character and Walley.

Ask the other group to improvise a story entitled the Magic Pan. Students should include the following points in the story:

1. Where the story is taking place
2. When the story is taking place
3. Why the pan is called the "magic" pan
4. How the magic pan and the vitamin C characters help them get the iron they need.

When students are ready have them share dramatizations with the rest of the class.

Rap time

Review food sources of iron and vitamin C
Ask class why vitamin C is important
How else can we increase the iron we get from our diets?

Materials

bell
*puppets: Ollie Orange, Tammy Tomato, Betty Broccoli, Peter Pepper, Iron Ike the Spike, Walley, Red Meat Character, Dried Beans Character, Iron Pan Man
*VITAMIN C fact sheet
*Comic strip - The Adventures of Iron Ike the Spike
felt board
Dairy Council food models

New Terms

vitamin C

Creative Dramatics Techniques

large/small muscle movement
improvisational role playing
pantomime/object reality
sound/motion exercises

* Provided (Patterns and instructions for puppets)

Lesson VIII Breakfast

Title: Breakfast - A Smart Start

Objectives:
1. Students will name at least one reason why breakfast is important.
2. Students will name at least one food that they would eat for breakfast that is a source of protein; iron; and vitamin C.

Warm up Activity (object reality)

Ask class to think of machines that need some form of energy or fuel to be able to work (i.e. cars, toys, boats, rockets, trains). Have students pantomime the following scenes using the machine they have chosen:

1. How their machine works when it has plenty of energy
2. How their machine works when it only has a small amount of energy
3. How their machine works when it has no energy

Introduction

Ask class to show how they can do jumping jacks or run in place when they have a lot of energy, a little energy and very little energy. Explain that just like cars, boats, rockets and toys need to be refueled, we too must get refueled. Ask students where we get our "fuel" from? Explain that today's lesson is about breakfast. Mention that eating breakfast is especially important because the last time the body was "refueled" was at the previous night's dinner.

"Rupert the Tired Rabbit" (Sound/Motion Story or puppet show)

Read "Rupert the Tired Rabbit" by R.K. Schaffner. During the story students can act out the story from their places. Divide the class into two groups. One group can represent Rupert Rabbit, the other, Tommy Turtle.

(Variation - Put on a puppet show for the class).

Discussion

Discuss the important concepts in the story. Discuss reasons students skip breakfast. Let students describe the types of breakfasts they consume. Encourage students to consider eating non-traditional foods for breakfast.

Making Breakfast

Divide the class into groups of 3-4 students. Each group should plan a breakfast menu according to one of the following themes: School day breakfast, Sunday morning breakfast, Breakfast while camping, Breakfast on the way to school, etc. Students should become the foods on their menu. Note: Ask students to try to include foods that are sources of Protein, Iron and Vitamin C. The foods they become should be foods they would eat for breakfast and not necessarily typical breakfast foods like eggs, toast, and orange juice. When the class is ready, have each group share their menu ideas with the rest of the class.

Alternate Activities:

1. T.V. Commercial/Interview

Tell students that they have just been "discovered" and are being asked to do a T.V. commercial/interview about breakfast. Divide class into groups of 3-4 students and allow a few minutes for students to plan their commercial. When ready, have students share their ideas with the"T.V. audience." One student may wish to be an interviewer and ask questions such as:

1. Why is breakfast so important?
2. What kinds of foods should I eat for breakfast?
3. What kinds of foods should I eat when:
   - I don't have time to sit and eat breakfast?
   - I do have time to sit down and eat breakfast?
   - I'm going on a hiking trip?

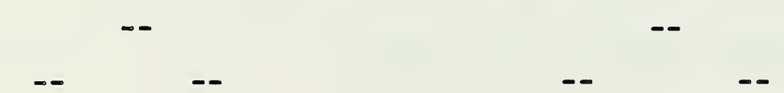
Interviewees may plan their commercial from the standpoint of children in fourth grade or from specific foods.

2. The Alphabet Game

Ask students to sit in a circle. Beginning with the student to your right or left, have them say the first letter of the alphabet and think of a food that could be eaten for breakfast that begins with that letter (i.e. A-apple, B-bread). All students should accompany this answer with movements suggesting characteristics of the food (i.e. shape, taste, smell) or how it is eaten or prepared. Each student should take a turn until the alphabet is complete.

3. Musical Breakfast Game

Set up two sets of three desks or chairs in the following arrangement:



On each desk/chair place food models of foods that are sources of protein, iron and vitamin C. Divide the class into two teams and give each student a small paper bag. Start the music. Students should walk in a circle around the 3 chairs while the music is playing. When the music stops, students should freeze. Students directly in front of one of the desks may choose one picture and place it in their paper bag. At the end of the song, students will look inside their paper bags to see if they have foods that give them protein, iron and vitamin C. Each student having foods containing these nutrients wins one point for his/her team. The team with the most points wins.

Students not having food sources of protein, iron and vitamin C should tell the class which nutrients they are missing. They may show through actions or words what food they would like to have to help make this breakfast a better one. All students can show how they feel after eating a hearty breakfast.

Rap time

Review the reason breakfast is important.

Materials

food models (Dairy Council)
small paper bags
record, record player
"Rupert the Tired Rabbit" by R.K. Schaffner (from Dandelion,4165 Fowler Dr. Bellbrook, Ohio 45305)

*Puppets - Rupert Rabbit, Tommy Turtle

New Terms

NONE

Creative Dramatics Techniques

large/small muscle activities
creative movement
sound/motion exercises
improvisational role playing
puppetry
object reality

*Provided (patterns)

Lessons IX and X Review

Title: "Rapping" It All Up

Objectives: 1. Through improvisation, students will apply their knowledge of the food sources and functions of protein, iron and vitamin C to choosing food in real life situations.

Warm Up Activity (Treasure Hunt Game)

Display the following menus using foods from the "grocery store"

Menu #1: Peanut butter, crackers, grapefruit juice

Menu #2: Fish, baked beans, milk

Question: In which menu are there foods that supply complete protein, iron and vitamin C?

Answer: Menu #1 Peanut butter and crackers = complete protein
crackers iron
grapefruit juice vitamin C

Menu #3: Macaroni and beans, milk

Menu #4: Lentils and rice, orange juice

Question: In which menu are there foods that supply complete protein, iron and vitamin C?

Answer: Menu #4 Lentils and rice = complete protein
Lentils iron
orange juice vitamin C

Menu #5: Cottage cheese and fruit

Menu #6: Broccoli and tomato salad

Question: Which menu will help your body get the iron it needs?

Answer: Menu #6 The vitamin C from the tomato salad will help absorb the iron from the broccoli.

Improvisations

Tell class that this lesson and the next will focus on reviewing protein, iron and vitamin C. Divide class into groups of 3-4 students. Let one student from each group choose an index card from a hat/box on which is written a situation that requires the student to make a nutritionally sound food choice. Students can choose foods from a simulated grocery store and may use props as desired. Students can then plan their rationale for choosing the foods they have "purchased." Their rationale should be dramatized according to the situation described on each index card. After each dramatization, discuss the decisions made.

Situations:

1. You and your friends are planning a surprise birthday party. One of the foods you all decided to serve is mixed nuts. Are mixed nuts sources of complete protein? If they are complete proteins, show a scene where you are explaining to your friends the reason that this is a complete protein. If they are not sources of complete protein, go to the grocery store and buy a food that you can add to the nuts to make the party treat a source of complete protein. Then, show a scene where you are explaining to your friends the reason that this is a complete protein.

2. You are having a slumber party tonight. Tomorrow morning you and your friends will make breakfast. Go to the grocery store with your friends and buy foods that will make a nutritious breakfast. (Hint: try to buy foods that are good sources of protein, iron and vitamin C). Show a scene that begins when you wake up. Show how you and your friends are making breakfast and talking about why the breakfast you are making is so good for you.

3. You and your friends are on your way home from baseball practice. You are tired and hungry and you want an afternoon snack. You learned in nutrition class about iron and so you decide to buy a snack that will give you this important mineral. Can you buy anything else that will help you get the iron you need? Explain to your friends why you chose this snack. (Hint: one friend can buy a less nutritious snack. Can you convince him that your snack is more nutritious?)

4. Tonight you are helping to cook supper. Your mom asks you to go to the store and buy her a new pan so that she can cook the kidney beans. What kind of pan will you buy? Explain to your mom your reason for buying that kind of pan when you come home from the store.

5. You are shopping for tonight's supper. Since meat costs a lot of money, you have decided to cook a meal tonight that does not include meat. You have learned that it is important to eat foods that are complete proteins. Choose two foods that together will be a source of complete protein. Explain to your family why you did not buy meat and why you chose the foods you bought.

6. You are a famous chef and every night you do a cooking show on T.V. Tonight you are making a delicious beans and rice casserole with kidney beans, tomato sauce and rice. Since you also know about nutrition tell your T.V. audience why this meal is so good to eat.

7. You are a Nutrition Expert. You have been asked to do a T.V. commercial advertising animal and vegetable sources of protein. Tell your T.V. audience which foods are animal sources of protein and which are vegetable sources of protein. Explain why we need to eat protein foods. Do these foods have any other important nutrient that you learned about? If they do, make sure you tell the T.V. audience about this extra bonus. (Hint: you may make a food display for your commercial).

8. Today you are making lunch. The foods you put in your lunch box are: a cheese sandwich and raisins and milk. Are any of these foods sources of protein? Are they complete or incomplete sources of protein? Are any of these foods sources of iron? Do any of these foods have vitamin C? When you are at school, compare your lunch to your friends' lunches. Whose lunch is most nutritious? Why?

9. You are eating supper and the other family members do not want to eat their dark green leafy vegetables or drink their tomato juice. Show how you can convince them that it is important to eat these foods. Be sure to tell them about the nutrients in these two foods.

10. This morning you woke up late. You have only 15 minutes to get out the door or you will be late for school. You know that it is important to eat breakfast but there isn't very much time. Will you eat breakfast or skip it? If you decide to eat breakfast, what will you eat? Will these foods give you protein, iron or vitamin C? Can you eat these foods on the way to school? You meet your friends on the way to school. Tell them what happened this morning and what you decided to do.

11. You are a nutrition teacher and today you will teach about iron. You will show and tell your fourth grade class which foods are sources of iron and why iron is important in your body. Before teaching your class, go to the grocery store and buy foods that are sources of iron so that your students can see them.

12. You are a Girl Scout/Boy Scout. You and your friends are going back-packing for a day. Your leader put you in charge of deciding what food to bring for snacks. You know that the food cannot be too heavy or need to be put in the refrigerator. Your friends want to bring candy and cookies. Are these snacks good for you? Can you convince your friends that there are other snacks that taste good and are good for you too? (Hint: go to the grocery store and show your friends examples of snacks that are sources of protein, iron and vitamin C).

13. You and your friends are coming home from a roller skating party and everyone is very hungry! What snack can you give your friends to eat? Do they like these foods? If they do not want to taste what you serve, try to explain why it is a healthy snack and why they should taste it.

Materials

Props: (optional) chef hat, aprons, shopping bags, cash register, play money, iron skillet, aluminum pan

foods (canned/boxed items)

suggestions: cheese, crackers, sesame seeds, sunflower seeds, nuts, fresh fruit, citrus fruit, canned fruit, beans (kidney, garbanzo), lentils, eggs, fruit juice, bread, pancake mix, pizza, chicken, soup, tomato sauce, rice, vegetables (dark green leafy vegetables), macaroni, candy, cookies, peanut butter, graham crackers, meat, milk, cream cheese, cottage cheese, donuts, soda, brownies, chips, fish, turkey, meat loaf.

Creative Dramatics Techniques

improvisational role playing

MATERIALS FOR CREATIVE DRAMATICS MINICOURSE

Pre/Post Retention Test of Nutrition Knowledge

Application of Knowledge Test (A)

Application of Knowledge Test (B)

Student Evaluation Form

Definitions of Terms

Lesson I - No handouts

Lesson II - No handouts

Lesson III - The Cell
Digestive System Chart

Lesson IV - Protein Fact Sheet

Lesson V - No handouts

Lesson VI - Iron Fact Sheet
Vitamin C Fact Sheet
Ollie Orange, Tammy Tomato, Betty Broccoli, Peter Pepper, Iron Ike Walley (puppet pattern and directions)
Red Meat Character,Dried Beans Character
Iron Pan Man
Comic - "Adventures of Ike the Spike"

Lesson VIII - Patterns and directions for rabbit and turtle puppets

Lesson IX - No handouts

Lesson X - No handouts

NOTE: Dairy Council food models are recommended for use

Some materials need to be made by teacher, such as index cards with labels.

Some materials need to be collected, such as empty food containers, plastic jugs, a piece of iron ore, bell and felt board.

Storybook - "Rupert the Tired Rabbit" must be acquired by teacher. Address given in Lesson VIII

Pre-/Post-/Retention Test of Nutrition Knowledge

NAME

1. Draw an X on ALL the foods that are sources of PROTEIN

BAKED BEANS 46	APPLE 47	OATMEAL 48
BROCCOLI 49	CHEESE 50	HAMBURGER 51

2. Draw an X on ALL the foods that give you IRON

MILK 52	MEAT LOAF 53	KIDNEY BEANS 54
RAISINS 55	CARROTS 56	SPINACH 57

3. Draw an X on ALL the foods that are good sources of VITAMIN C.

POTATO 58	BROCCOLI 59	GREEN PEPPER 60
GRAPEFRUIT 61	CORN 62	CARROTS 63

4. Put a check (✓) next to one reason your body needs IRON.

_____ 64 STRONG TEETH

_____ 65 TO CARRY OXYGEN TO CELLS

_____ 66 HELPS YOUR BODY DIGEST FOOD FASTER

5. Put a check (✓) next to one reason your body needs VITAMIN C.

_____ 67 HEALTHY EYES

_____ 68 GIVES YOU QUICK ENERGY

_____ 69 HELPS YOUR BODY ABSORB IRON BETTER

6. Put a check (✓) next to the one reason that best describes why your body needs PROTEIN.

_____ 70 TO BUILD BODY TISSUE

_____ 71 TO REPAIR BODY TISSUE

_____ 72 TO BUILD AND REPAIR BODY TISSUE

35	36	37	38		41	42	43	44		45		80	

Application-of-Knowledge Test (A)

1. Circle the <u>one</u> food that you can eat <u>with</u> OATMEAL to help your body use the IRON better.

GRAPEFRUIT JUICE
47

EGG
48

CORN MUFFIN
49

GRAHAM CRACKERS
50

2. Jim is trying to choose what to eat for breakfast. Circle the <u>one</u> breakfast that will give him IRON, VITAMIN C AND COMPLETE PROTEIN.

BAGEL WITH PEANUT BUTTER, MILK
51

TOASTED CHEESE SANDWICH WITH TOMATO ON WHOLE WHEAT BREAD
52

EGG SALAD SANDWICH ON WHITE BREAD, MILK
53

3. Susan is helping her mom decide what meals to cook this week. They want to include foods that are sources of COMPLETE PROTEIN. Put a check (✓) next to ALL the foods that are sources of COMPLETE PROTEIN.

_____ KIDNEY BEANS AND RICE
54

_____ MACARONI
55

_____ CHICKEN
56

_____ LENTILS
57

_____ PEANUT BUTTER ON CRACKERS
58

35	36	37	38	41	42	43	44	45	80
2			..					2	

Application-of-Knowledge Test (B)

1. Put a check (✓) next to the things you can do to help your body get the IRON it needs. (HINT: there is more than one answer).

_____ 47 Eat a cream cheese and jelly sandwich on white bread along with a glass of milk.

_____ 48 Eat a hamburger on a whole wheat bun along with a glass of orange juice.

_____ 49 Drink juice before and after exercising.

_____ 50 Cook food in an iron pan.

2. Circle the one breakfast that gives you a good source of IRON, VITAMIN C, AND COMPLETE PROTEIN.

HARD-COOKED EGGS, CHEESE, RITZ CRACKERS, COCOA
51

PEANUT BUTTER AND BANANA ON WHOLE WHEAT BREAD, ORANGE JUICE
52

BACON AND EGGS, MILK
53

GRAPEFRUIT JUICE, RAISINS, DANISH PASTRY
54

3. Billy wants an after-school snack before he goes to play baseball. Circle ALL the foods that are sources of COMPLETE PROTEIN.

CARROT AND PEPPER STICKS
55

PEANUT BUTTER ON CRACKERS
56

SUNFLOWER SEEDS AND RAISINS
57

TURKEY SANDWICH
58

35	36	37	38	41	42	43	44	45	80
1								2	

Student Evaluation Form

NAME _____

1. Circle the face that shows how you liked your nutrition classes.

46

2. Circle the face that shows how you liked acting out stories about nutrition.

47

3. Circle the face that shows how you liked using puppets.

48

4. Circle the face that shows how you liked becoming different foods and telling why they were good to eat.

49

5. Put a check (✓) next to the activity you liked the best in your nutrition classes.

_____ acting out stories about eating nutritious foods
1

_____ acting out the jobs of protein, iron, and vitamin C in the body
2

_____ acting out stories using the grocery store
3

_____ doing puppet shows
4

50

6. Put a check (✓) next to the activity you liked the least in your nutrition classes.

_____ acting out stories about eating nutritious foods
1

_____ acting out the jobs of protein, iron, and vitamin C in the body
2

_____ acting out stories using the grocery store
3

_____ doing puppet shows
4

51

41 42 43 44

45

DEFINITIONS OF TERMS

1. amino acids--the building blocks of protein.

2. cell--the smallest unit of life. Every living thing is made of cells.

3. cell membrane--the outer covering of the cell.

4. complete protein--a food containing all nine of the amino acids our bodies cannot make. Animal sources of protein (i.e. meat, fish, poultry, eggs, cheese) are complete proteins.

5. digestion--the process of preparing food or breaking food down into nutrients for the cells to use.

6. digestive juices--fluids in the stomach and intestines that help break down food into nutrients.

7. digestive system--the body's path through which food passes to be broken down into nutrients for the cells. The parts of the digestive system are the mouth, esophagus, stomach, small intestine and large intestine. Saliva and digestive juices help to prepare the food for the cells.

8. esophagus--the tube that carries food from the mouth to the stomach. The tube has muscles that move in and out to send food into the stomach.

9. incomplete protein--a food that is missing one or more of the nine amino acids that our bodies cannot make. Vegetable sources of protein (i.e., grains, nuts, seeds, legumes) are incomplete proteins.

10. iron--a mineral that is found in meat, fish, poultry, dark green leafy vegetables, beans, dried fruits and whole grains. Iron is needed to allow the blood to bring oxygen to the cells.

11. large intestine--a tube that extends from the small intestine. Food that is not digested and nutrients that are not absorbed into the bloodstream pass through the large intestine in wave-like motions and pass out of the body as waste.

12. legume--a bean or pea that grows in a pod

13. mineral--a natural element, found in the earth, that cannot be destroyed by fire or burning.

14. nutrients--substances found in food which serve as food for the cells. There are many different nutrients such as proteins, carbohydrates, fats, vitamins, and minerals. They each have a special job to do in the body and are important in helping the body grow and stay healthy.

15. nutrition--the study of food and how it relates to good health.

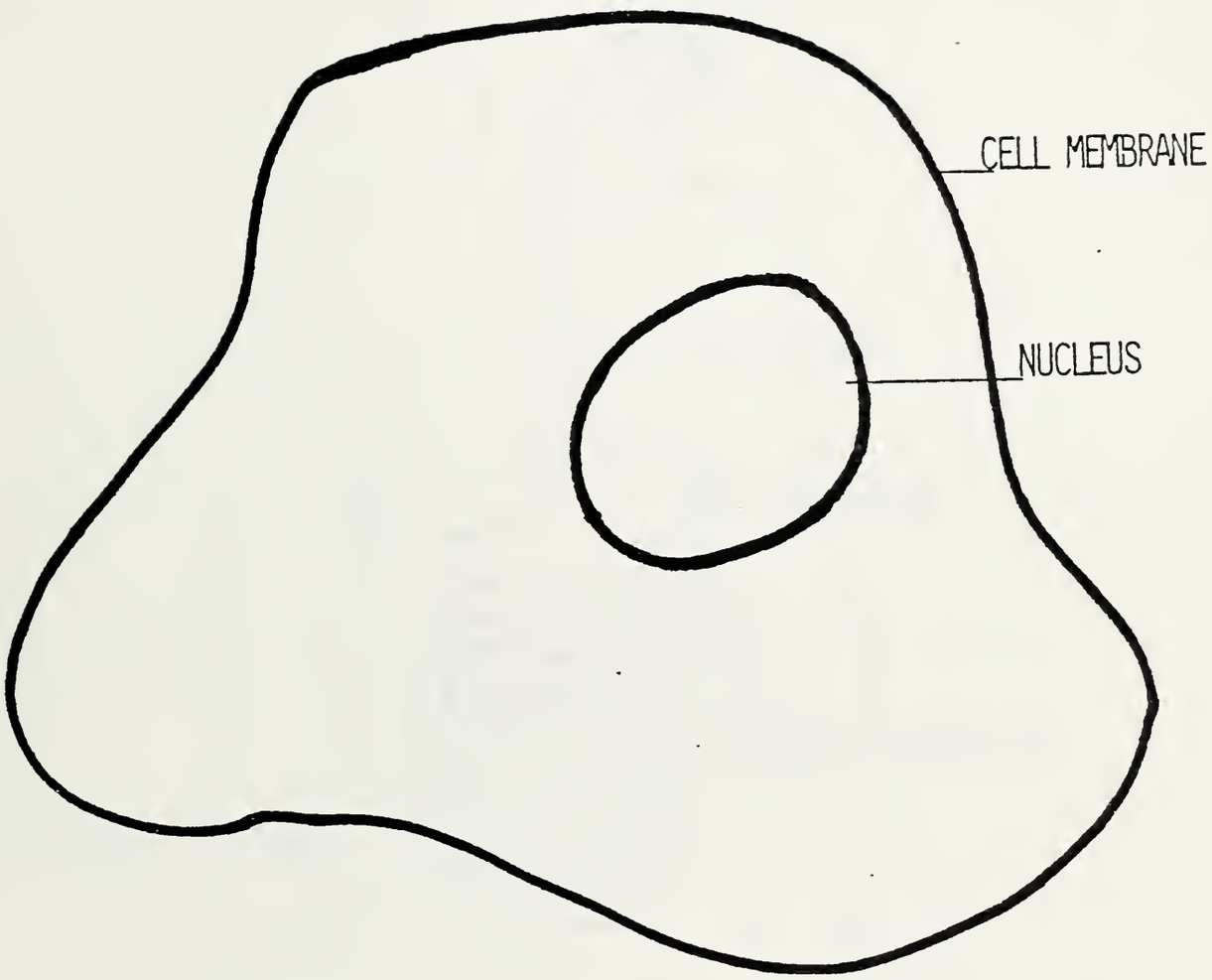
16. saliva--the fluid present in the mouth that begins to break down food into nutrients and makes it soft, facilitating the passage of food through the esophagus into the stomach.

17. small intestine--a tube extending from the stomach that moves in and out to help push food along.

18. stomach--a "balloon"-like organ that receives food and stretches to hold the food that is swallowed. The stomach moves in and out in waves to mix the food and digestive juices together and to push the food along into the small intestine.

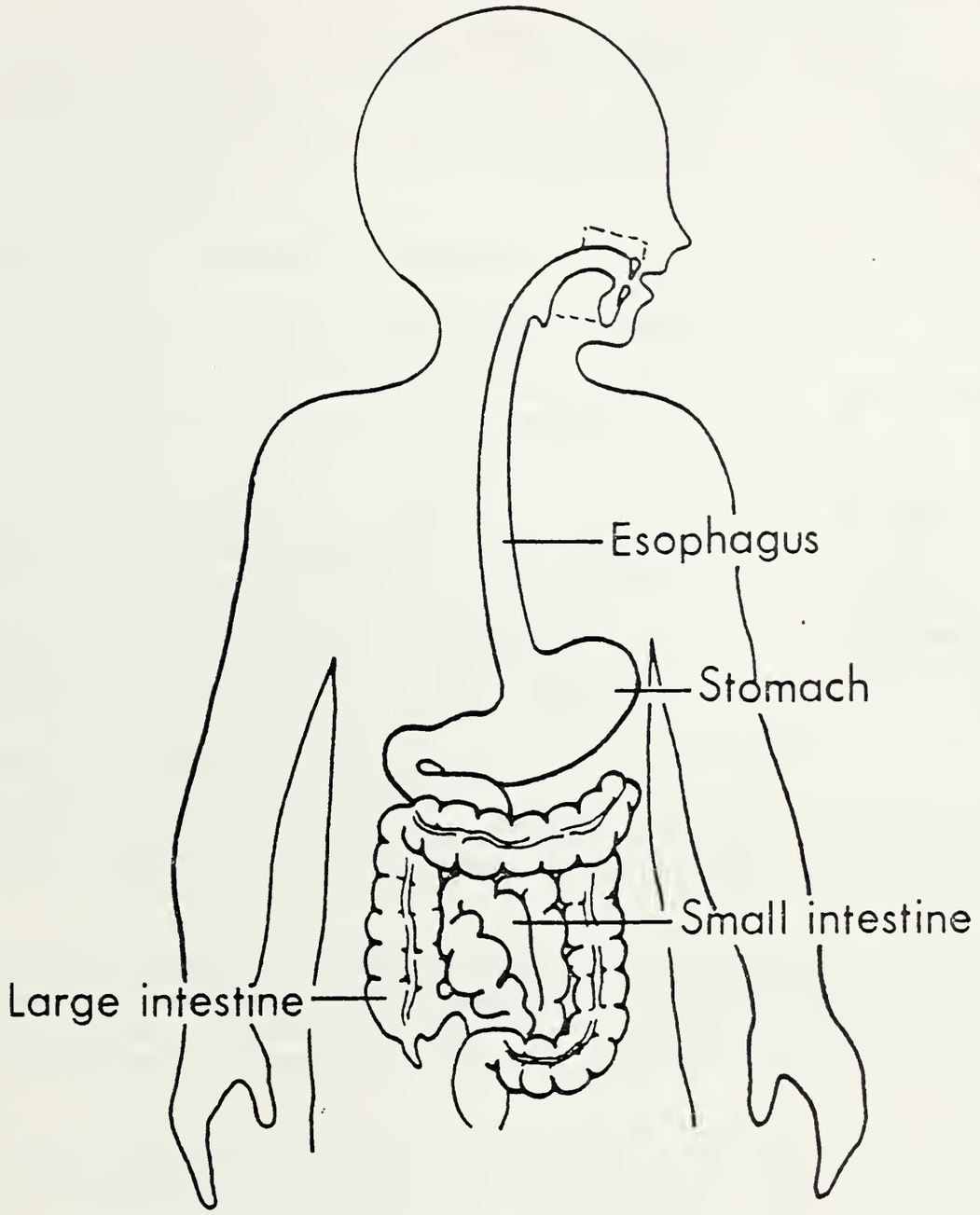
19. vitamin C--a nutrient that is found in citrus fruits, dark green leafy vegetables, potatoes, green peppers, and tomatoes. One of its jobs is to help the body better absorb the iron from foods.

THE CELL



CNETP
Connecticut Nutrition Education and Training Program
Department of Nutritional Sciences, College of Agriculture and Natural Resources
University of Connecticut and State Department of Education Child Nutrition Programs

DIGESTIVE SYSTEM CHART



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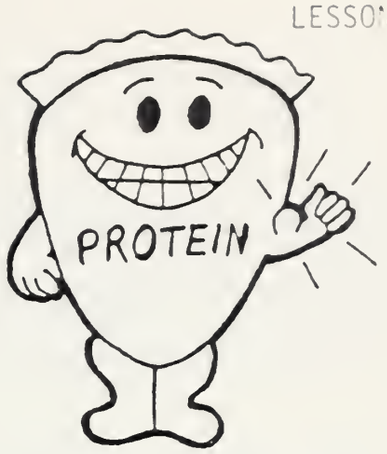
PROTEIN



WHY DOES THE BODY NEED PROTEIN?

The body uses protein to:

* renew and/or repair cells and body tissues.
* grow (to make new cells and tissues - children, teens, pregnancy).
* make proteins such as enzymes, some hormones and antibodies.
* supply energy.

WHAT FOODS ARE GOOD SOURCES OF PROTEIN?

Protein is found in foods of both plant and animal origins. Protein from animal sources is of a higher nutritional quality than the plant protein. Learn below why this is so and how to improve a meal prepared from the vegetable protein source!

Beef, pork, lamb, chicken and fish as well as eggs, milk, yogurt, and cheeses are examples of animal protein. Legumes (soybeans, dried beans, dried peas, lentiles), nuts, and grains (corn, rice, wheat and other cereals) are examples of plant protein. Plant protein is also found in products such as spaghetti, tortillas and bread.

WHAT HAPPENS TO PROTEIN IN THE BODY?

Approximately one-fifth of our body weight is protein. Proteins are part of the structure of every cell and body tissue including hair, nails, blood, skin and bones.

All proteins are made up of smaller units or building blocks called amino acids. When we eat protein such as in a hamburger it is broken down by our digestive system into amino acids. The amino acids are then put back together inside our body cells in many different combinations to make new proteins characteristic of our own bodies.

In order for the body to grow or repair itself, all amino acids must be available to the body at the same time and in the right proportions. Some of the amino acids needed can be made by the body, while others cannot. Those which the body cannot make are called essential amino acids. These must be supplied in the foods we eat.

DO ALL PROTEIN FOODS SUPPLY ALL THE NECESSARY ESSENTIAL AMINO ACIDS?

Proteins from animal sources contain all the essential amino acids we need in the right proportions. For this reason we call animal protein complete protein. Plant protein foods do not supply all the necessary amino acids in the proportions needed by our bodies since they are usually low in one or more of the essential amino acids. Therefore we call plant protein an incomplete protein.

HOW CAN PROTEIN FROM PLANT SOURCES BE MADE COMPLETE?

The protein from the plant foods can be made more usable by combining foods from the plant and animal sources at the same meal. A few examples of animal and plant

protein combinations are: ham in split pea soup, chili with kidney beans, milk and cereal, macaroni and cheese, tuna casserole, or corn chowder made with milk.

All plant proteins are not low in the same essential amino acid. It is thus also possible to make a complete protein source by combining two different plant foods that when eaten together at the same meal will provide all amino acids needed to make a complete protein. However, just any combination of vegetables and grains would not necessarily make a complete protein source. For example, a combination of corn and wheat, which are both low in the same amino acid does not provide a complete protein.

As a general rule, combinations of grains and cereals (like rice, wheat, corn) together with legumes (dried beans, peas, lentils, garbanzos, etc.) make a high quality protein source. Some examples of such plant protein combinations include peanut butter on wheat bread, rice and beans, baked beans and brown bread, split pea soup with corn bread, or pita bread with garbanzo beans.

HOW MUCH PROTEIN DO YOU NEED?

Recommended Dietary Allowances (RDA) for Protein in grams (g) per day

	males	females
4 - 6 years old	30 g	30 g
7 - 10 years old	34 g	34 g
11 - 14 years old	45 g	46 g
15 - 18 years old	56 g	46 g
over 18 years of age	56 g	44 g

Needs of children and teens for protein of high quality are very high because so much of body growth takes place during these years.

HOW CAN WE GET THE PROTEIN WE NEED?

The best way to make sure you get all the amino acids your body needs is to eat a variety of protein foods each day. The following foods are examples of good protein sources. Two or three servings from the list below can provide all the protein a person needs in a day. Protein content of the foods listed is given as a percentage of their contribution to the daily recommended protein allowance for males, age 15 and older, which is 56 grams.

Protein Content
(as percent of RDA; RDA = 56 grams)

1/2 chicken breast	46%	1/2 cup cottage cheese	25%
1 hamburger patty (3 ounces)	41%	2 eggs	21%
1 pork chop (2.7 ounces)	34%	1 cup plain yogurt (made with added milk solids)	21%
1 cup chili with beans	34%	2 pieces cheese pizza	21%
1 cup baked beans with 1 slice brown bread	30%	1 cup macaroni and cheese, canned	16%
3 fish sticks (1 ounce each), breaded	27%	1 bowl cereal with 1/2 cup milk	13%
peanut butter sandwich	25%		

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LESSON VI

IRON

WHY DOES THE BODY NEED IRON?

Iron is needed:

- to build red blood cells. (Iron is a part of hemoglobin, which is the material that makes red blood cells red and which carries oxygen to cells all over the body.)

- to help cells to use oxygen.

WHICH FOODS ARE THE BEST SOURCES OF IRON?

Among the foods with the highest content of iron are liver, clams, oysters, dried prunes and pumpkin kernels. Beef is also rich in iron. Other foods such as lamb, pork, poultry, fish, whole grain or enriched breads, cooked dried beans or peas, dried fruits, nuts, green leafy vegetables, and egg yolks are all good sources of iron in our diet. Read labels - some cereals are fortified with iron - for example, bran flake cereal is highly fortified. (See next page.)

HOW MUCH IRON DO WE NEED?

Recommended Dietary Allowances (RDA) for Iron in milligrams (mg) per day

	males	females
4 - 10 years old	10 mg	10 mg
11 - 18 years old	18 mg	18 mg
19 - 50 years old	10 mg	18 mg
51 years +	10 mg	10 mg

Iron supplements are usually prescribed for women during pregnancy and 2-3 months after delivery.

IS A LOW INTAKE OF IRON A COMMON NUTRITIONAL PROBLEM IN THE UNITED STATES?

Yes, there are several situations in which iron intake is often inadequate: (1) in infancy, (2) during periods of rapid growth in childhood and adolescence, (3) during the female reproductive years, and (4) in pregnancy.

A low intake of iron can lead to iron deficiency anemia - a condition in which the blood does not have enough hemoglobin or red blood cells to carry oxygen to the cells. People with iron deficiency anemia tire easily after mild exercise and may be apathetic and less resistant to infections.

HOW CAN WE GET THE IRON WE NEED?

An average American diet contains about 6 milligrams of iron per 1000 calories. It is difficult for people who need 18 milligrams of iron per day and who consume 2000 calories per day or less to obtain enough iron unless they take special care to include iron-rich foods in their diet. The iron content of several foods is listed below.

Iron Content as % RDA

	7 - 10 years, both males and females	females 11-50 years, males 11-18 years
3 ounces beef liver	75	42
½ cup chili con carne with beans	43	24
½ cup cooked spinach	40	22
¼ cup pumpkin seeds	39	22
3 ounces hamburger patty	30	17
½ cup cooked dried beans	25	14
½ cup mixed nuts	17	9
½ cup tuna fish salad	14	8
¼ cup raisins or dates	13	7
½ cup diced chicken (light and dark meat)	10	6
1 egg yolk	9	5
1 tablespoon light molasses	9	5
½ cup berries	8	4
1 slice whole grain or enriched bread	8	4
½ cup oatmeal	7	4
Examples of ready-to-eat breakfast cereals, iron added:		
2/3 cup (1 ounce) 40% Bran Flakes (Kellogg's)	81	45
1¼ cup (1 ounce) Cheerios (General Mills)	45	25
1 cup (1 ounce) Corn Flakes (Kellogg's)	18	10

IS ALL THE IRON WE TAKE IN FROM FOOD AVAILABLE TO THE BODY?

No, on the average only about 10 percent of the iron from our meals is available to the body. The amount of available iron from food depends on:

(1) IRON STORES: The body of an iron deficient person tries to compensate for the small or nonexistent iron stores by increasing the fraction of the dietary iron which is absorbed by the intestine. However, this adjustment is limited and it may not compensate fully for the iron-poor diet.

(2) TYPE OF FOOD: Animal sources of iron are usually better absorbed than plant sources of iron. For example, iron from red meats is better absorbed than iron from cooked dried beans. Iron from egg yolks, however, is poorly absorbed.

(3) COMPOSITION OF THE MEAL: Iron absorption from plant foods and eggs can be increased if a good source of vitamin C is eaten at the same time.

(4) HOW FOOD IS COOKED: Iron pans (non-enameled and without heavy carbon buildup) can contribute iron if foods are cooked in them.

Knowledgeable food choices, cooking and menu planning can increase the amount of iron available in your diet. DO NOT FORGET TO:

- Choose foods that are high in iron.
- Read labels (for example some breakfast cereals are fortified with iron).
- Cook in iron pans whenever possible .
- Serve vitamin C-rich foods at every meal.

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VITAMIN C

WHY DOES THE BODY NEED VITAMIN C?

Vitamin C (ascorbic acid) is involved in the formation of the "glue" that helps to hold body cells together. Vitamin C helps:

* heal cuts, bruises, and broken bones.
* maintain healthy gums.
* the body resist infections (colds and flu).
* enhance iron absorption.

WHAT FOODS ARE THE BEST SOURCES OF VITAMIN C?

Citrus fruits - oranges, grapefruits, lemons, limes and tangerines - are excellent sources of vitamin C. Canned or frozen citrus juices may be used instead of the fresh ones. Other examples of fruits rich in vitamin C include strawberries, cantaloupe, papaya and mangoes.

The richest sources of vitamin C among vegetable foods are broccoli, green peppers, cauliflower, and green leafy vegetables. Some other valuable vegetable sources of vitamin C are baked or boiled potatoes, spinach, tomatoes or tomato juice, and cabbage.

WHY ARE RAW FOODS BETTER SOURCES OF VITAMIN C THAN THE COOKED ONES?

Vitamin C is the most unstable of all vitamins. It is destroyed by heat and by exposure to air. It also dissolves in water and will go down the drain if cooking water is discarded. This is the reason why cooked foods will contain less vitamin C than the raw materials they were prepared from.

To preserve vitamin C in foods, cook vegetables and fruits in steam or small amounts of water. Do not overcook. Cover and serve as soon as possible. Store juices in closed containers. Do not let fruits and vegetables soak in water. Slice or dice raw fruit or vegetables just before serving.

DO VITAMIN C-RICH FOODS PROVIDE ANY OTHER NUTRIENTS?

Besides being good sources of vitamin C, fruits and vegetables also provide many other nutrients. For example a glass of orange juice which provides about 100 milligrams of vitamin C contains also some thiamin, vitamin A, calcium, iron, potassium, sodium, and many other trace minerals that are essential to the body. These are the "fringe benefits" of obtaining vitamin C from foods, rather than from a pill.

ARE POTATO CHIPS OR FRUIT-FLAVORED SODA AND DRINKS GOOD SOURCES OF VITAMIN C?

No. Soda, even orange or strawberry, has no vitamin C because it is made using artificial flavors. Although some fruit-flavored drinks might be fortified with vitamin C, they are low in other nutrients and contain large amounts of sugar.

Potato chips also are not a good source of vitamin C. One would have to eat about 100 chips (1150 calories) in order to get as much vitamin C as is supplied by one medium-sized baked potato (only 145 calories).

HOW MUCH VITAMIN C DO YOU NEED?

Recommended Dietary Allowances (RDA) for Vitamin C in milligrams (mg) per day

	males	females
4 - 10 years old	45 mg	45 mg
11 - 14 years old	50 mg	50 mg
15 years and over	60 mg	60 mg

The need for vitamin C may increase when we are sick, injured or recovering from an illness or an operation.

HOW CAN WE GET THE VITAMIN C WE NEED?

Vitamin C is not stored in the body to any great extent, so it must be supplied in the foods every day. A variety of vitamin C-rich foods can be eaten throughout the day. Below are a few examples of servings of some vitamin C-rich foods.

Vitamin C Content as Percent of RDA

	4-10 years (RDA=45 mg)	15 years and over (RDA=60 mg)
1 medium orange	over 100%	over 100%
1/2 cup cooked broccoli	over 100%	100%
1/2 cup orange juice	over 100%	90%
1/2 cup grapefruit juice	100%	80%
1/2 green pepper	100%	75%
1/2 cup raw cauliflower	100%	75%
1/2 cup raw strawberries	100%	75%
1/2 cup cooked green leafy vegetables (collards, kale, mustard, spinach, turnip)	80%	60%
1 medium-sized baked potato	70%	50%
1/2 cup diced cantaloupe	60%	45%
1 tomato	60%	45%
1/2 cup finely shredded cabbage	45%	35%

N65-80
10/80

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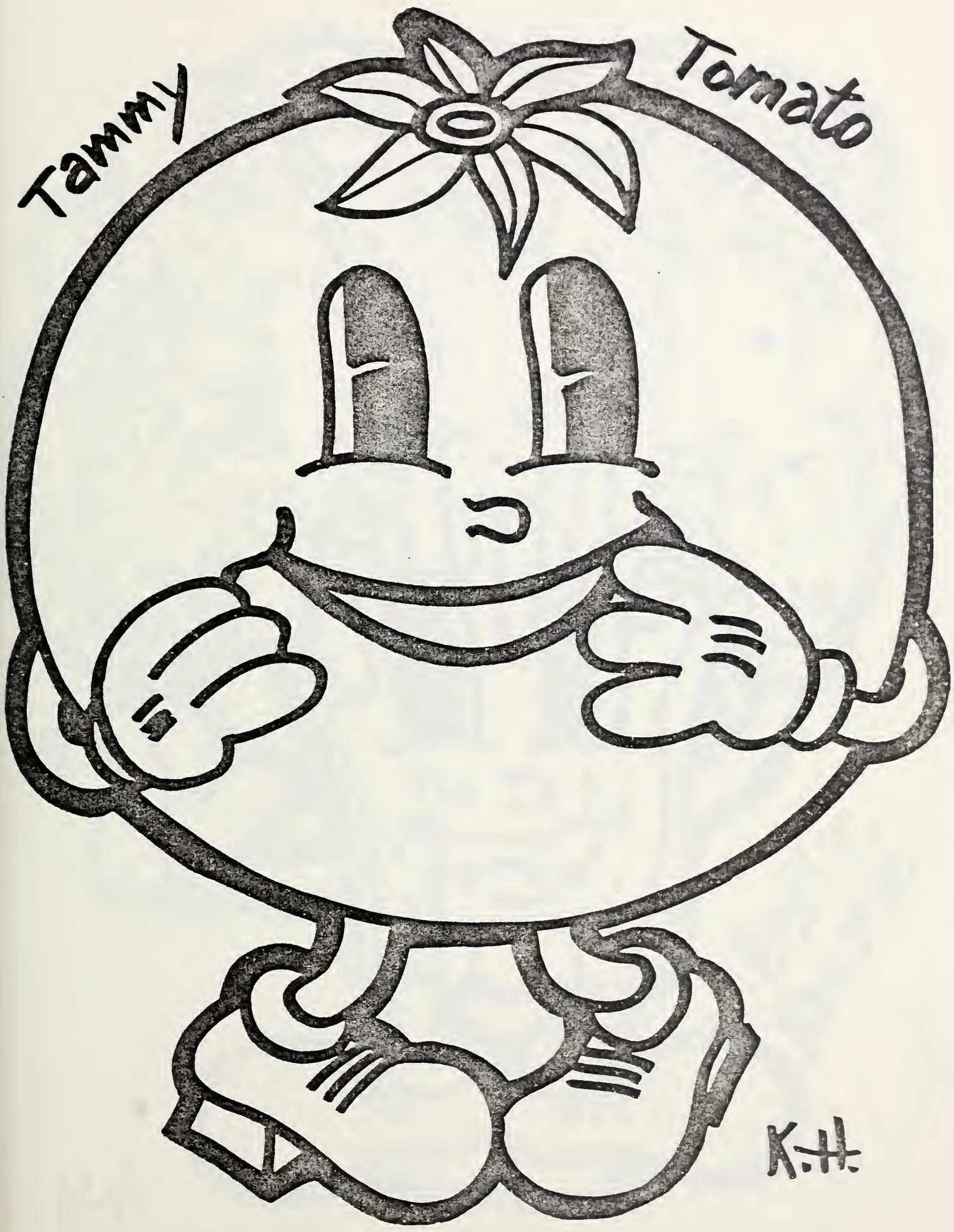

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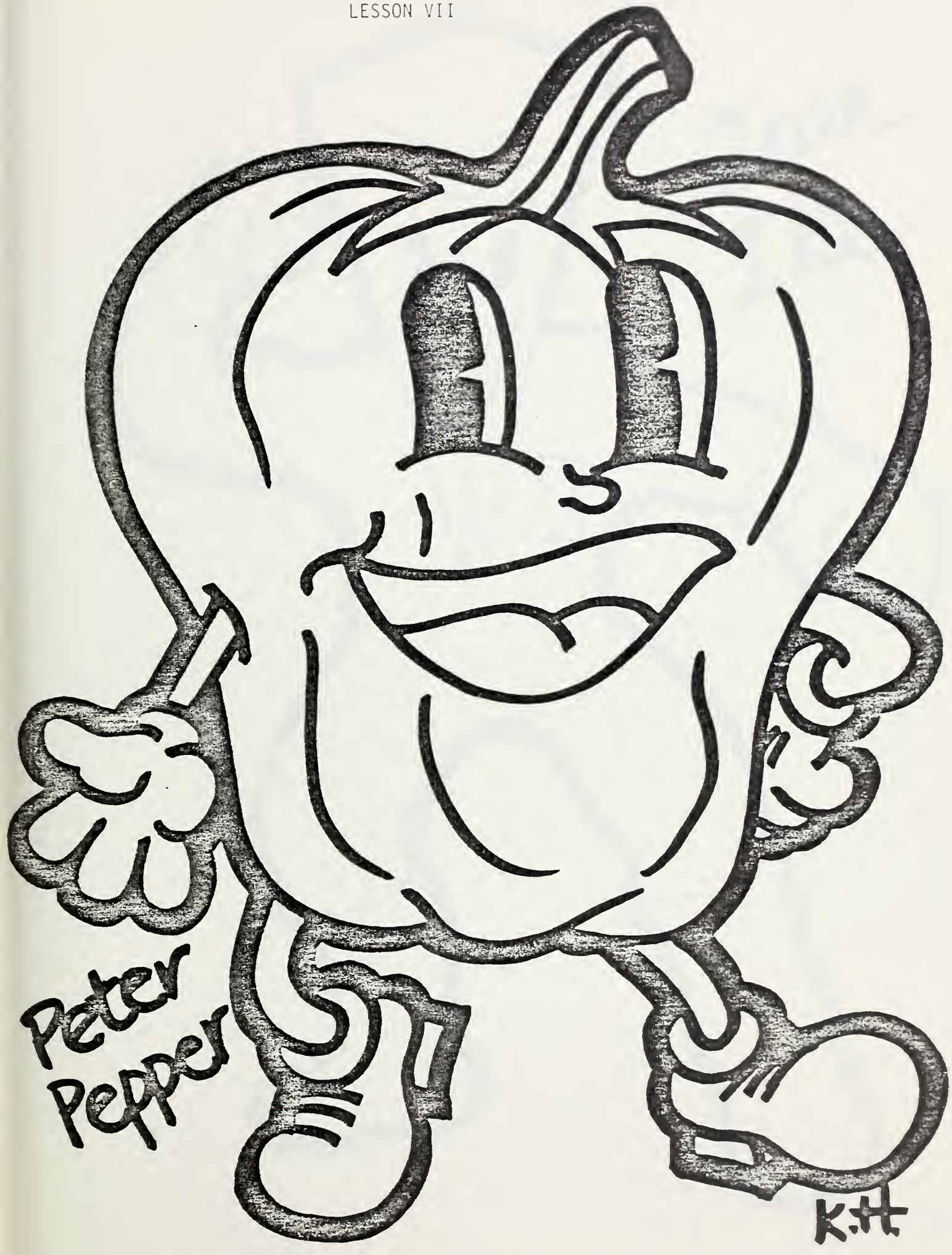

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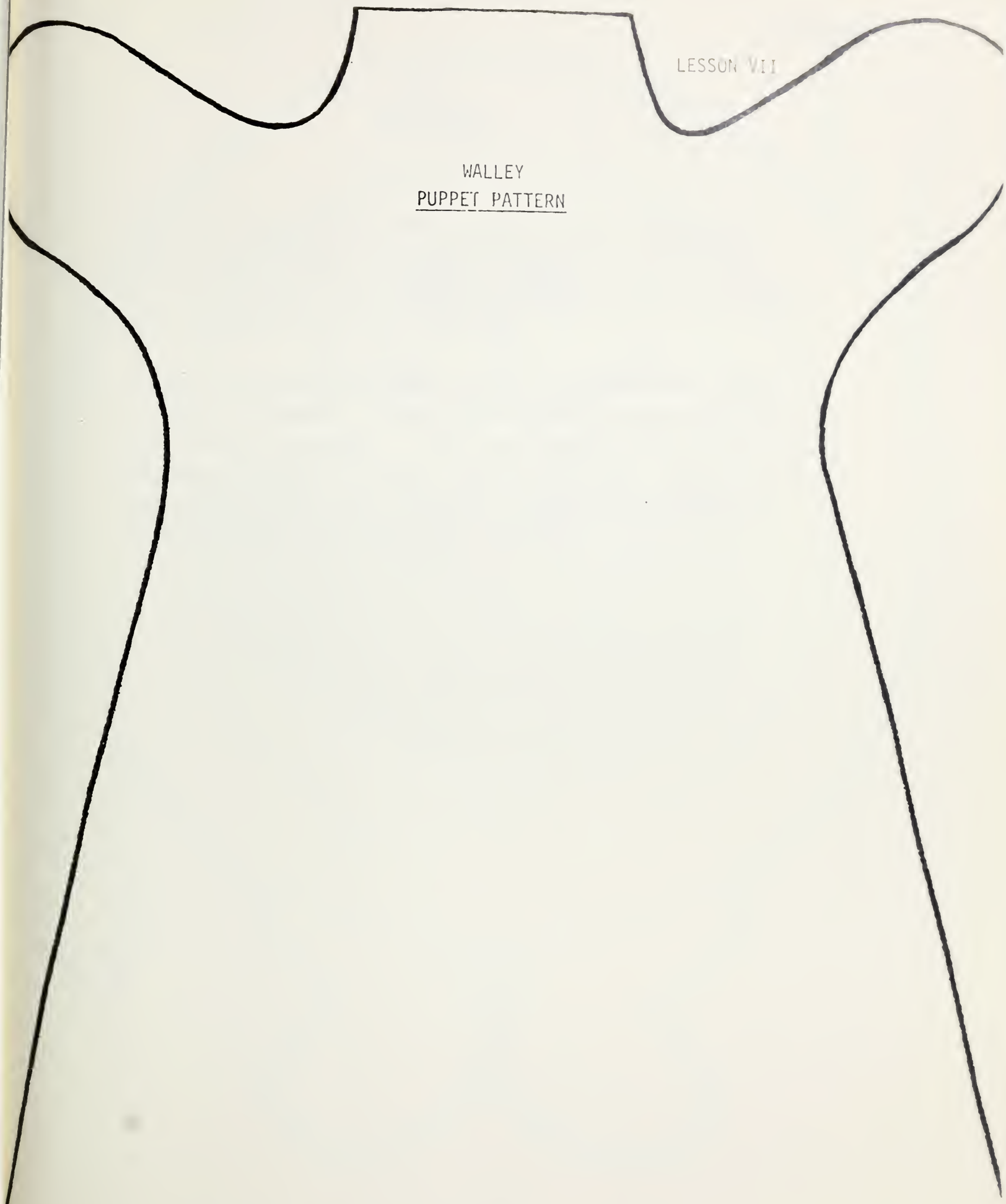
WALLEY

PUPPET PATTERN



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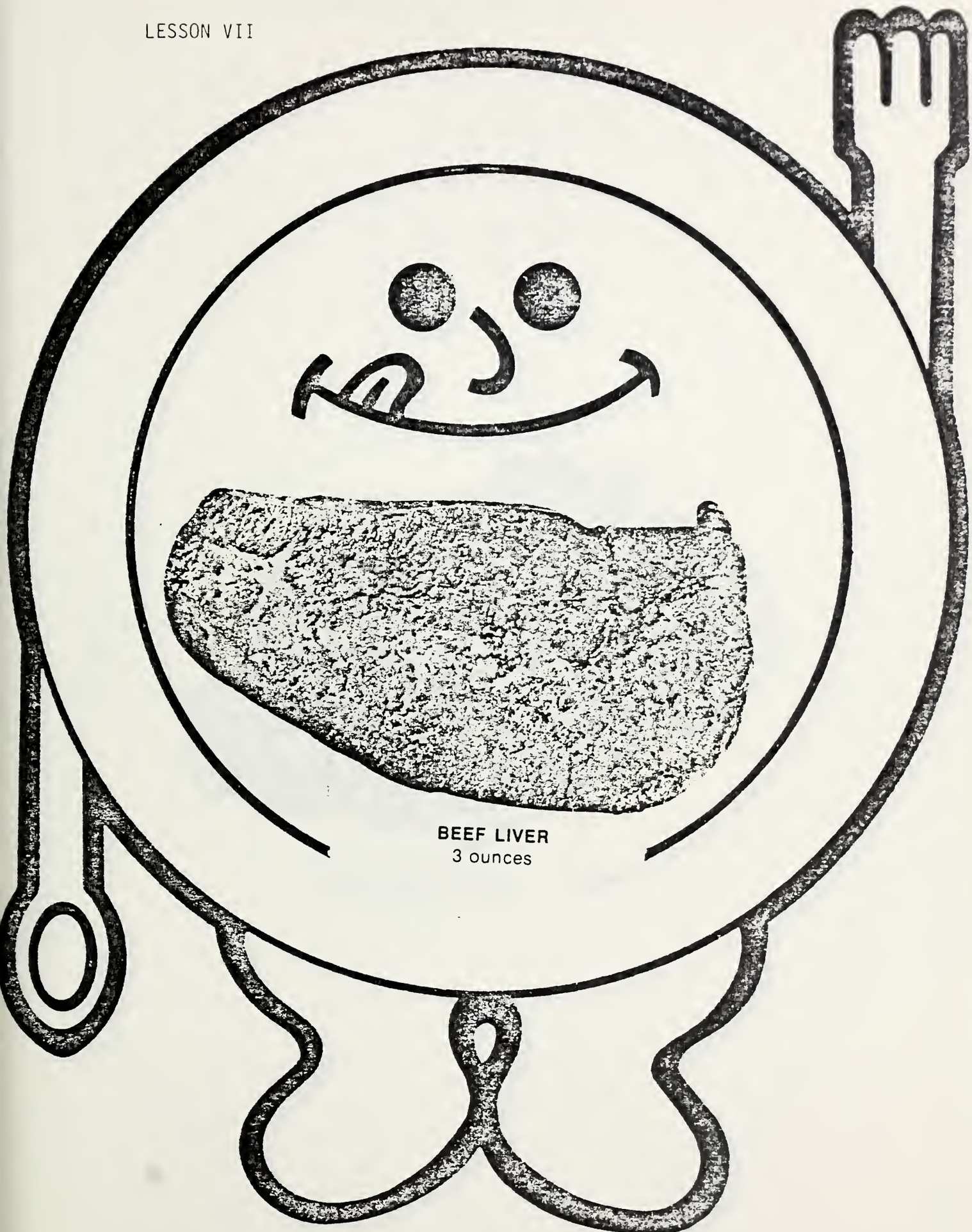
WALLEY
HAND PUPPET

1. Trace the puppet pattern onto a piece of wax or tissue paper. Cut two whole puppets out of the material. Put wrong sides of the fabric together and stitch, leaving the neck area and bottom open. Decorate with felt if desired.

2. To make the head of the puppet, obtain a styrofoam ball (approx. 3 inches in diameter). Make a thick flour and water mixture and coat strips of newspaper. Cover the styrofoam ball with the coated newspaper. Smooth all edges. Let dry overnight. Paint head and decorate with eyes, nose and hair. The nose can be made with a button and hair can be made with rug yarn.



BEEF LIVER
3 ounces

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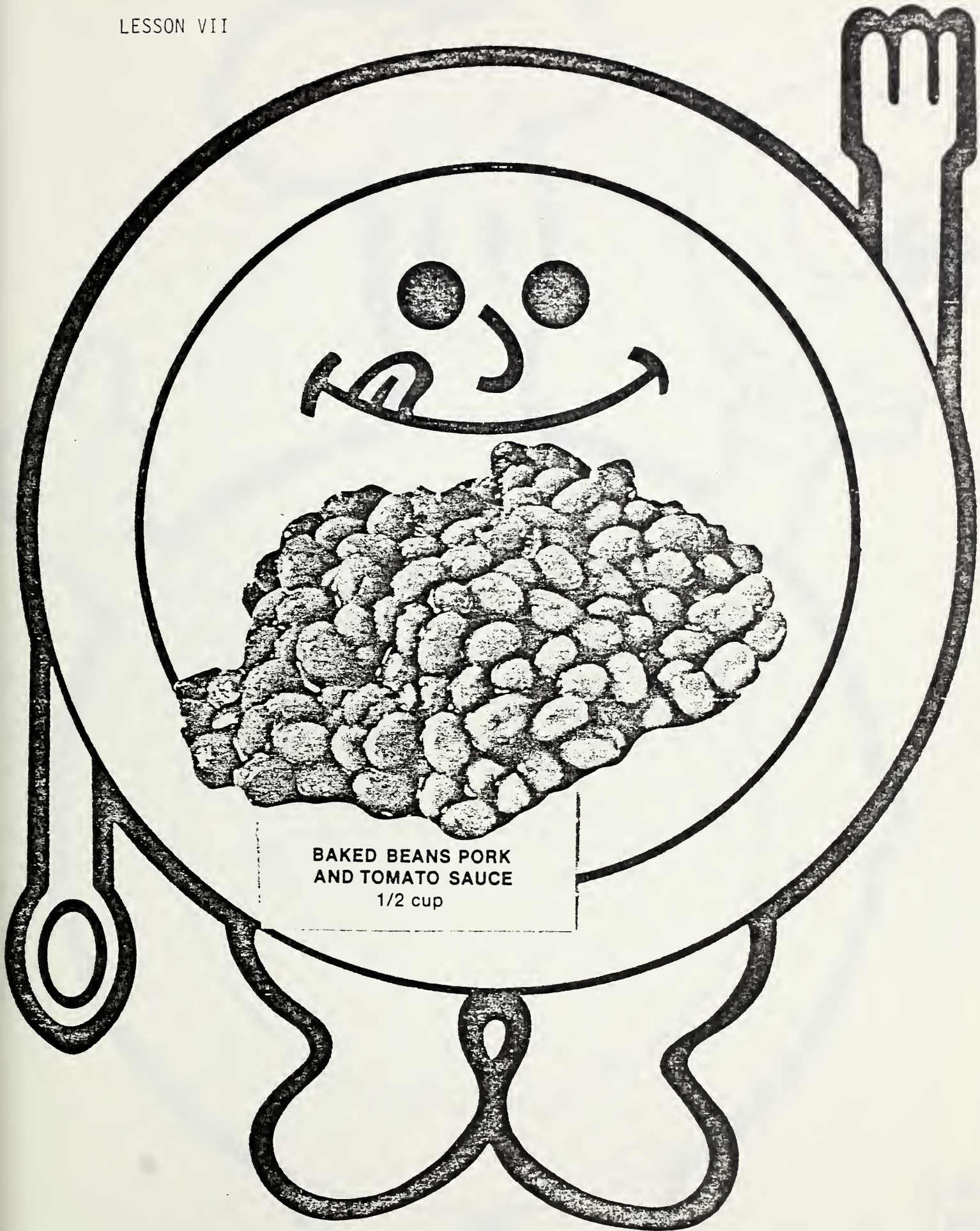

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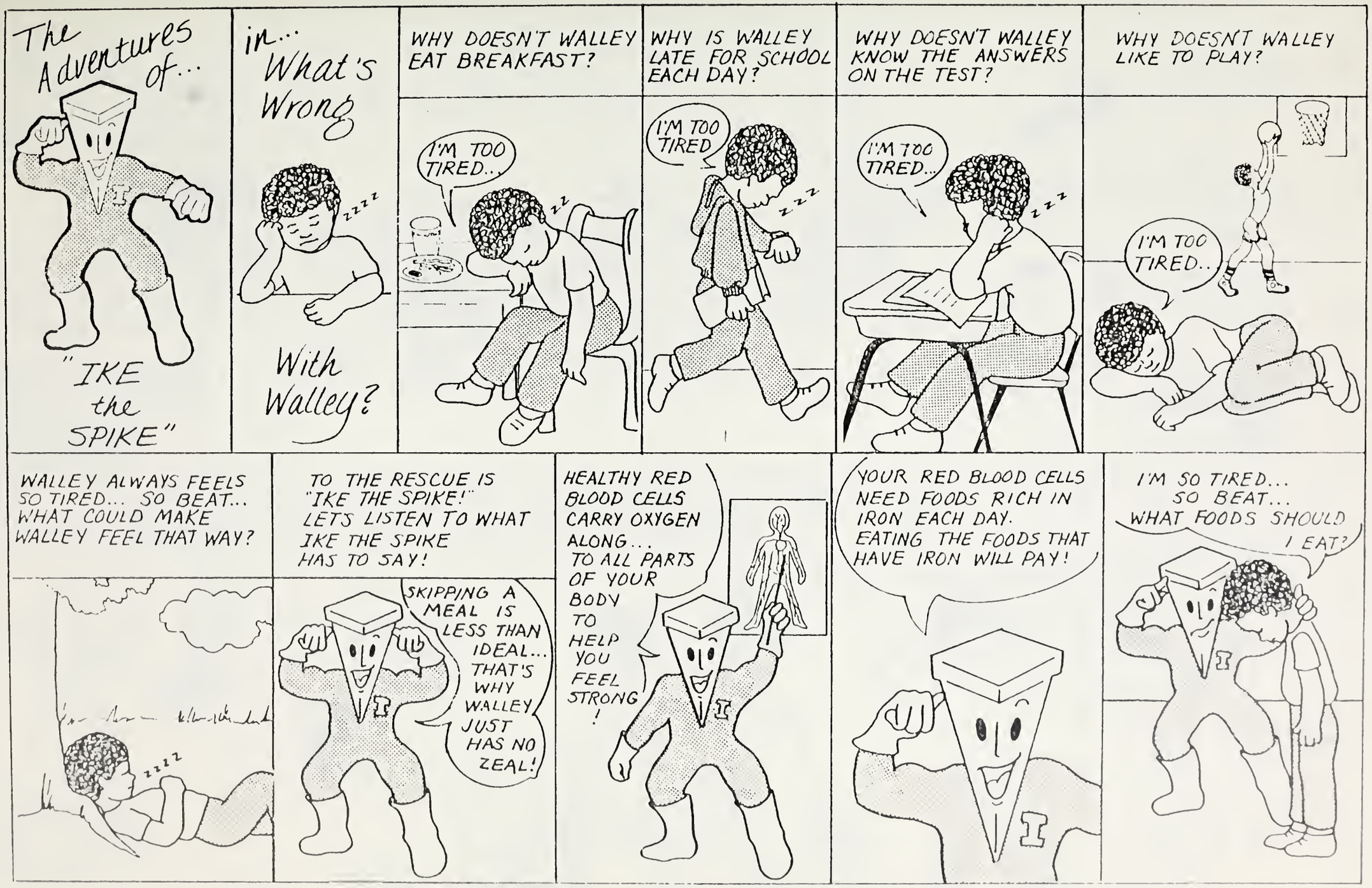

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WHOLE GRAINS AND RED MEATS ARE GOOD FOODS TO PICK... DRIED BEANS AND DARK GREENS WILL HELP TO DO THE TRICK!

MEAT

WHEN I HELP TO MAKE YOU FEEL STRONG, I LIKE TO BRING MY FRIENDS ALONG.
THEY'RE ALL HELPFUL AS THEY CAN BE, BECAUSE EACH ONE SUPPLIES VITAMIN C!

A GRILLED HAMBURGER WITH TOMATO OR...

CHICKEN AND A BAKED POTATO!

AN EGG WITH AN ORANGE SLICE, OR...

BEAN CHILI WITH WHOLE GRAIN RICE!

BROCCOLI AND GREENS WILL BE A TREAT TO SERVE ALONG WITH YOUR FAVORITE MEAT!

TRY THEM ALL AND YOU WILL SEE WHAT A DYNAMIC DUO IKE AND OLE VITAMIN C CAN BE!

SO... LISTEN TO WHAT "IKE THE SPIKE" HAS TO SAY...
"EATING FOODS RICH IN IRON WILL CERTAINLY PAY!
EATING MORE IRON WILL HELP YOU ALONG...

TO PLAY...

TO THINK...

TO WORK, AND

FEEL STRONG!"

The End!

DIRECTIONS FOR MAKING PUPPETS

FOR RABBIT OR TURTLE:

1. Cut out 2 puppet forms (Pattern piece A). Put right sides of material together and stitch on dotted line approximately 5/8" from the edge. Clip curves.

2. Cut out 1 mouth (Pattern piece B). Leave puppet body inside out and open the mouth area to form an oval. (See diagram).
Fit mouth piece over the oval and stitch the mouth onto the puppet body. Trim edges, clip curves and turn right side out.

FOR RABBIT:

3. Cut 4 Outer ears (Pattern piece C). For each ear stitch two ear shapes together 1/8" from edge. Cut 2 Inner ears (Pattern piece D). Stitch or glue inner ears to outer ears. Stitch ears to top of puppet head.

4. Cut a triangle for rabbit nose. Stitch or glue in place.

5. Cut out eyes or purchase eyes in a novelty shop. Glue in place.

6. Cut 4 arm shapes (Pattern piece F). For each arm, put right sides of material together and stitch on dotted line 1/8" from edge. Clip curves. Turn right side out, stuff with cotton or other suitable material, and stitch to puppet body.

7. Sew or glue a cotton ball to back of rabbit puppet for a tail.

FOR TURTLE:

3. Make turtle shell. Using pattern piece I, cut 2 turtle shell forms. Put right sides of material together and stitch along the edge leaving a 2" opening at the bottom. Clip curves. Decorate shell with light and dark green felt spots. Turn shell right side out and stuff with cotton or other suitable material. Hand sew shell to puppet body.

4. Cut a small round circle for turtle nose (1/2" in diameter). Stitch or glue in place.

5. Cut out felt eyes or purchase eyes or small pom poms (1/2" in diameter) in a novelty shop. Attach eyes to face.

6. Cut 4 arm shapes (Pattern piece II). For each arm put right sides of material together and stitch 1/8" from edge. Clip curves. Turn right side out, stuff with cotton or other suitable material and stitch to puppet body.

SUGGESTIONS FOR MATERIALS

For Rabbit:

gray felt for puppet body
pink felt for inner ear, nose and mouth
cotton or other suitable material for stuffing and rabbit tail
eyes-black and white felt or eyes available in novelty shops

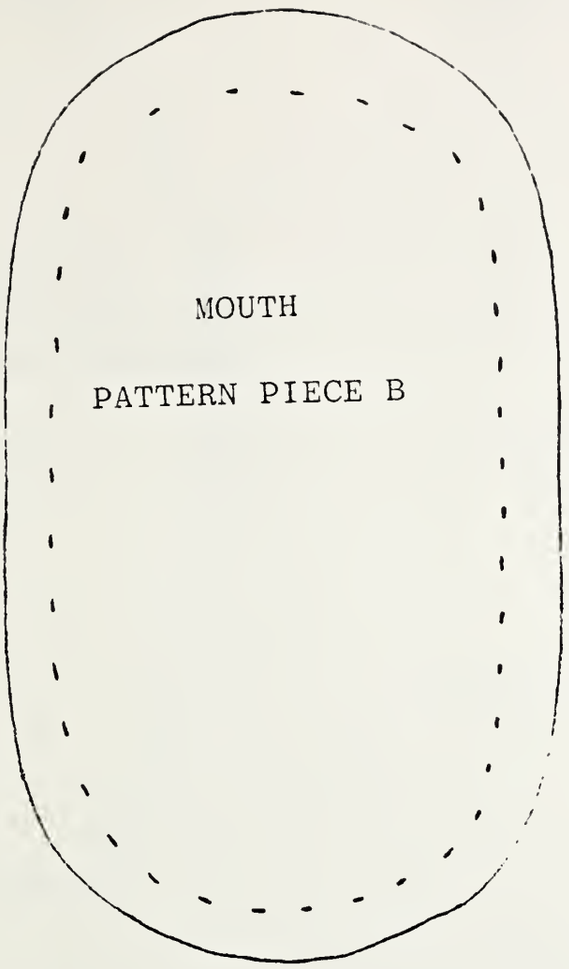
For Turtle:

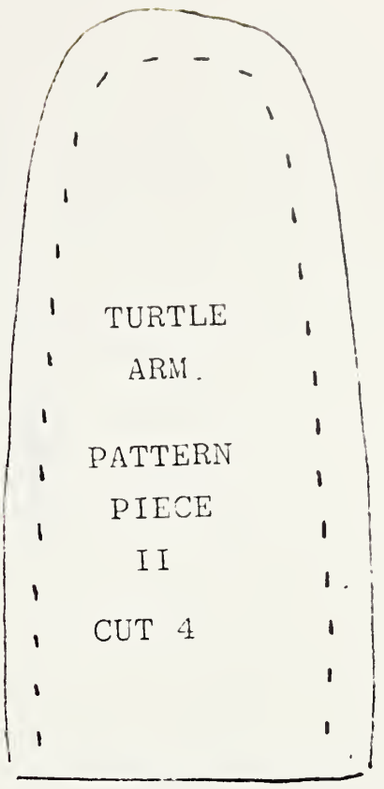
dark green felt for puppet body and turtle shell
light and medium dark green felt for turtle shell spots
red felt for mouth and nose
cotton or other suitable material for stuffing
eyes-white pom poms (1/2" in diameter) or eyes available in novelty shops

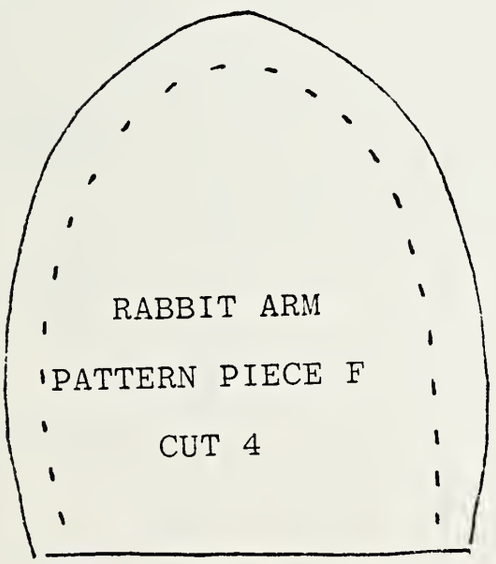
HAND PUPPET

1. Trace the puppet pattern onto a piece of wax or tissue paper. Cut two whole puppets out of the material. Put wrong sides of the fabric together and stitch, leaving the neck area and bottom open. Decorate with felt if desired.

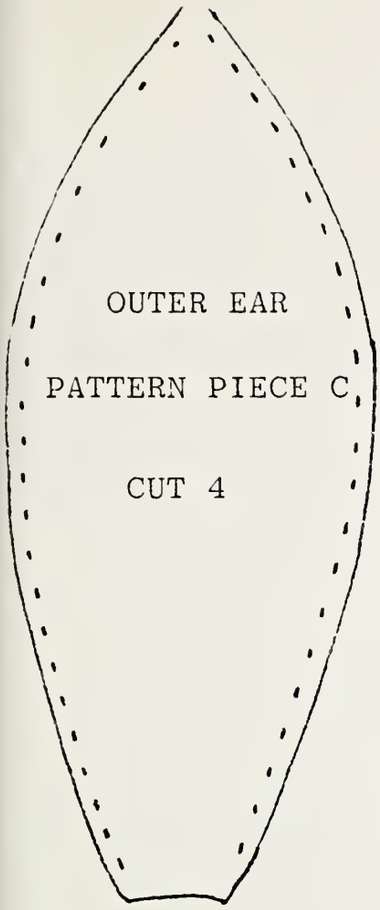
2. To make the head of the puppet, obtain a styrofoam ball (approx. 3 inches in diameter). Make a thick flour and water mixture and coat strips of newspaper. Cover the styrofoam ball with the coated newspaper. Smooth all edges. Let dry overnight. Paint head and decorate with eyes, nose and hair. The nose can be made with a button and hair can be made with rug yarn.

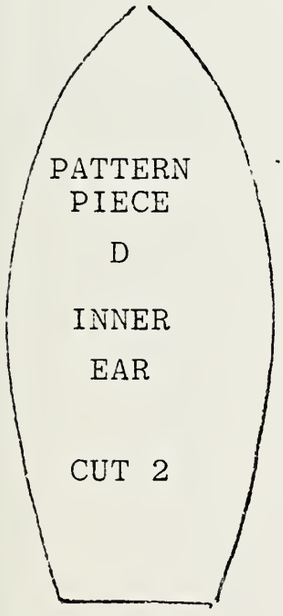

MOUTH
PATTERN PIECE B

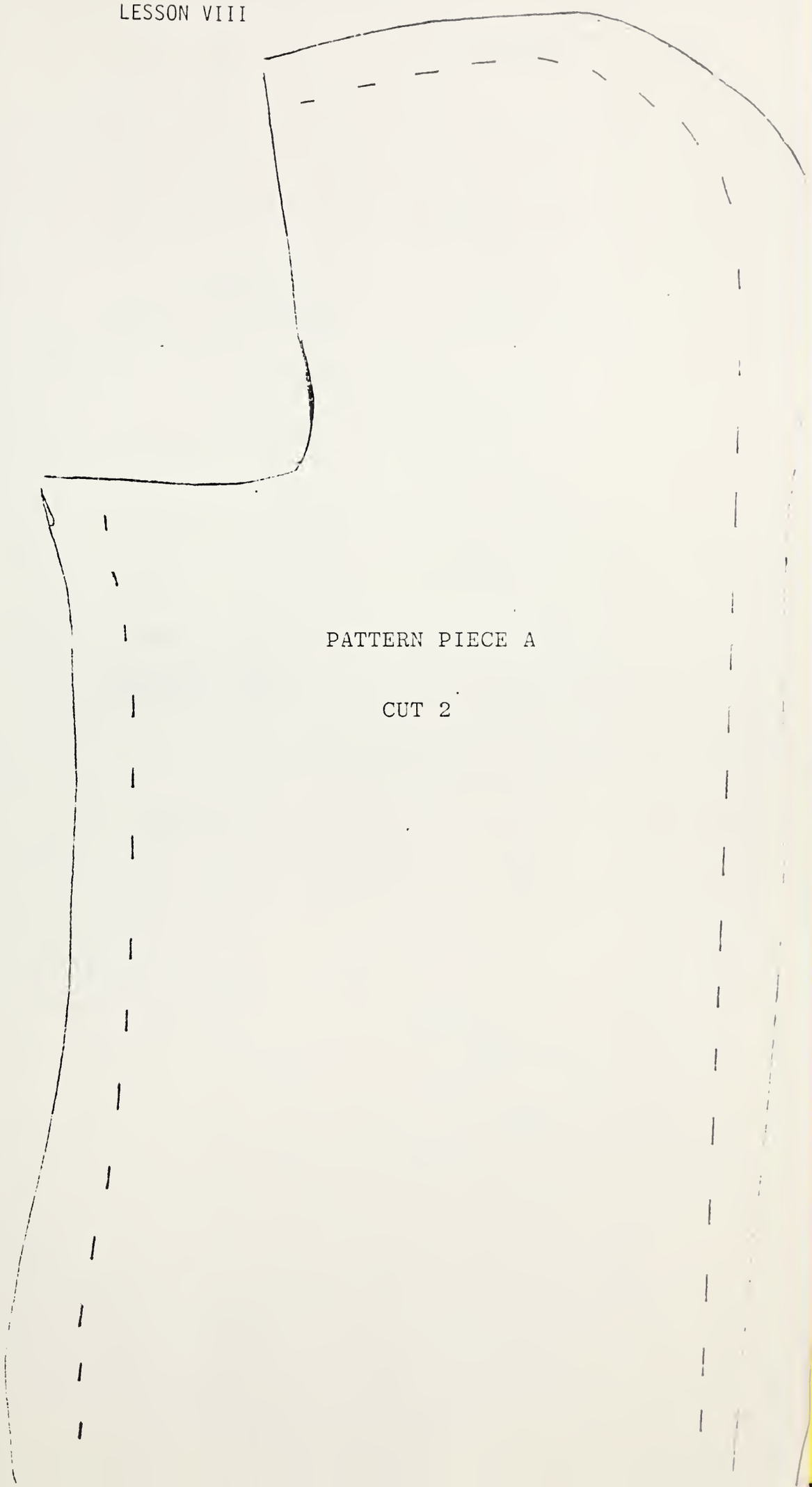

TURTLE
ARM.
PATTERN
PIECE
II
CUT 4

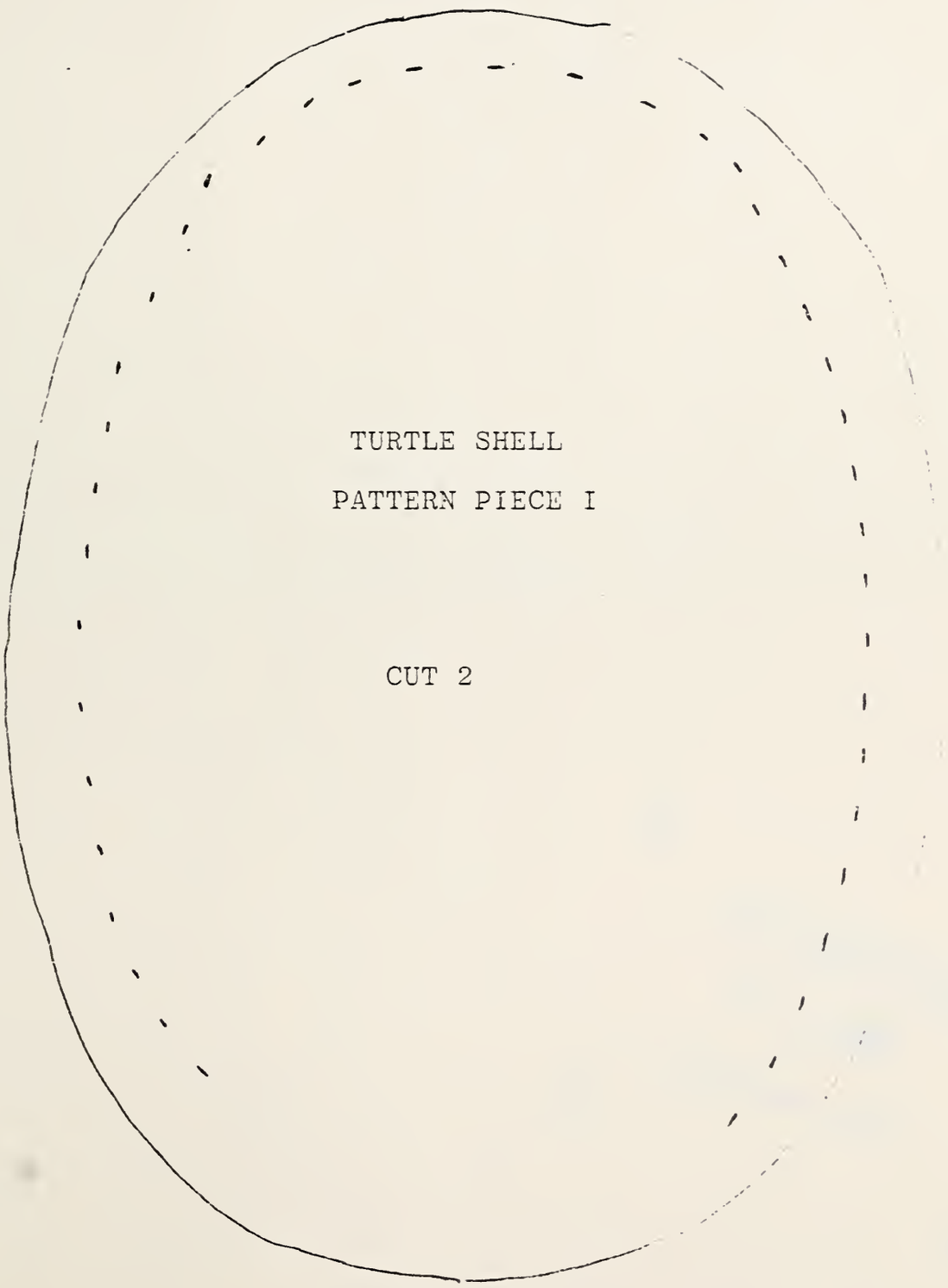

RABBIT ARM
PATTERN PIECE F
CUT 4

LESSON VIII


OUTER EAR
PATTERN PIECE C
CUT 4


PATTERN
PIECE
D
INNER
EAR
CUT 2


PATTERN PIECE A
CUT 2


TURTLE SHELL
PATTERN PIECE I
CUT 2